D-LINK *Air*Pro DI-754

5 GHz Multimode
Wireless Router

Manual

(02/02/2005)

D-Link

Building Networks for People

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Package Contents

Contents of Package:

- **D-Link *Air*Pro DI-754**
  5GHz Multimode Wireless Broadband Router
- Power Adapter – 5V DC, 3A
- Manual and Warranty on CD
- Quick Installation Guide
- Ethernet Cable (CAT5 UTP/Straight Through)

Note: Using a power supply with a different voltage rating than the one included with the DI-754 will cause damage and void the warranty for this product.

If any of the above items are missing, please contact your reseller.

System Requirements:

- Ethernet-Based Cable or DSL Modem
- Computers with Windows, Macintosh, or Linux-based operating systems with an installed Ethernet adapter
- Internet Explorer Version 5.5 or Netscape Navigator Version 4.79 and Above

Introduction

D-Link introduces the 802.11a wireless broadband router with optional 802.11b connection (using the D-Link *Air*Plus DWL-650+ Cardbus Adapter), as part of the D-Link *Air*Pro series of wireless networking products.

The new D-Link *Air*Pro DI-754 Multimode Wireless Router serves both 802.11a wireless networks at 54 Mbps (72 Mbps in *Turbo mode**) and 802.11b wireless networks (when used with the installed D-Link *Air*Plus DWL-650+ Cardbus Adapter) at 11Mbps (22 Mbps with D-Link *Air*Plus products.*)*

The DI-754 will automatically obtain an IP address and forward additional IP addresses to multiple clients for a seamless network connection and shared Internet access.

At 54Mbps (up to 72Mbps in *Turbo mode**) in the 5GHz frequency range and a simultaneous 11 Mbps (up to 22 Mbps with D-Link *Air*Plus products when the optional Cardbus Adapter is installed) in the 2.4GHz frequency range, the D-Link *Air*Pro DI-754 multimode router is capable of delivering the fastest standards-based wireless data transfers. Based on IEEE 802.11a and 802.11b technology, this next-generation multimode wireless access point provides excellent network interoperability.

Armed with powerful management and security capabilities, the D-Link *Air* Pro DI-754 has an intuitive and secure web-based interface that is powered by an embedded web server.

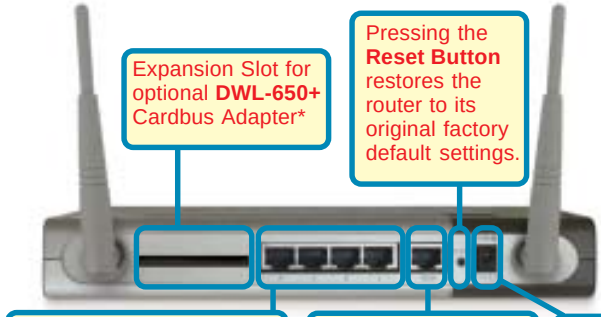
After completing the steps outlined in the *Quick Installation Guide* (included in your package) not only will you have the ability to share information and resources, but you will also be able to enjoy the freedom that wireless networking delivers, at speeds capable of handling a video stream.

*Maximum wireless signal rate based on IEEE Standard 802.11a specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

**When used with other D-Link AirPro products.*

With its web-based interface for easy integration into an existing network (accessible from most Internet browser applications), the DI-754 works with popular operating systems including Macintosh, Linux and Windows. This Manual is designed to help you connect the DI-754 into an existing 802.11a or 802.11b wireless network. *Please take a look at the **Getting Started** section in this manual to see an example of an Infrastructure network using the DI-754.*

Connections



*The Expansion Slot on the DI-754 will only work with a D-Link DWL-650+. Make sure the DI-754 Router is completely powered off before inserting the DWL-650+ into the Expansion Slot.

Features

- Setup Wizard for quick installation
- Fully compatible with 802.11a standard
- Supports data transfer rates of up to 54 Mbps at 5GHz
- Ethernet cable included
- Wireless range of up to 328 feet (100 meters) indoors[1]
- 3 year limited warranty (USA only)

Advanced Security Features

- Supports up to 152-bit WEP with dynamic keying
- Advanced firewall and security
- Supports multi-sessions with VPN passthrough

Features with Optional DWL-650+ *(D-Link DWL-650+ is available as a separate purchase)*

- Fully compatible with 802.11b standard
- Supports data transfer rates of up to 22 mbps at 2.4GHz
- Supports up to 256-bit WEP Encryption

1.Environmental factors may adversely affect range

LEDS

LED stands for **L**ight-**E**mitting **D**iode. The **DI-754** has 5 **Green** LEDs as shown below:

LED	LED Activity
Power	A steady light indicates a connection to a power source
M1	A solid light indicates that the DI-754 is ready
M2	A solid light indicates that the unit is defective
WAN	A solid light indicates connection on the WAN port. This LED blinks during data transmission.
WLAN 802.11a	A solid light indicates that the 802.11a wireless segment is ready. The LED blinks during 802.11a wireless data transmission.
WLAN 802.11b	A solid light indicates that the 802.11b wireless segment is ready (when the DWL-650+ is installed.) The LED blinks during 802.11b wireless data transmission.
Local Network (Ports 1-4)	A solid light indicates a connection, a blinking light indicates data transmission to an Ethernet-enabled computer on ports 1-4.

Wireless Basics

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. Strictly adhering to the IEEE standard, the D-Link wireless family of products will allow you to securely access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways

Wireless Basics *(continued)*

to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems support the same protocols as Ethernet adapter cards.

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Router is a device used to provide this link.

People use wireless LAN technology for many different purposes:

Mobility - Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.

Low Implementation Costs – WLANs (Wireless Local Area Networks) are easy to set up, manage, change and relocate. Networks that frequently change, both physically and logically, can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.

Installation Speed and Simplicity - Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.

Network Expansion - Wireless technology allows the network to go where wires cannot go.

Scalability – Wireless Local Area Networks (WLANs) can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to larger infrastructure networks to accommodate hundreds or thousands of users, depending on the number of wireless devices deployed.

Wireless Basics *(continued)*

The DI-754 is compatible with other ***D-Link Air*****Pro** *802.11a products, which include*:

- 5GHz Wireless Cardbus Adapters used with laptop computers (DWL-A650)
- 5GHz Wireless PCI Adapters used with desktop computers (DWL-A520)

The DI-754 is also compatible with the ***D-Link Air*****Plus** *802.11b wireless family (when you install the DWL-650+ into the expansion slot), which includes*:

- Enhanced 2.4GHz Wireless Cardbus Adapters used with laptop computers (DWL-650+)
- Enhanced 2.4GHz Wireless PCI cards used with desktop computers (DWL-520+)

Standards-Based Technology

The versatile DI-754 Wireless Broadband Router integrates both 802.11a and optional (with D-Link DWL-650+) 802.11b standards into a single unit.

The IEEE **802.11a** standard designates that devices may operate at an optimal data rate of 54 Mbps (72 Mbps in proprietary *Turbo* mode.) This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM** (**O**rthogonal **F**requency **D**ivision **M**ultiplexing) technology. **OFDM** works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. **OFDM** reduces the amount of **crosstalk** (interference) in signal transmissions. D-Link *AirPro* 802.11a products will automatically sense the best possible connection speed to ensure the greatest speed and range possible.

Based on the IEEE **802.11b** standard (when the optional D-Link DWL-650+ is installed in the expansion slot), the DI-754 is also interoperable with existing compatible 2.4GHz wireless technology with data transfer speeds of up to 22Mbps (with the D-Link *Air*Plus family of wireless devices), as well as standard 802.11b technology (the D-Link *Air* family of wireless devices), with speeds of up to 11Mbps.

Installation Considerations

The D-Link *Air*Pro DI-754 lets you access your network, using a wireless connection, from virtually anywhere. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or business. The key to maximizing wireless range is to follow these basic guidelines:

1. Keep the number of walls and ceilings between the DI-754 and your receiving device (e.g., the DWL-A650 or the DWL-650+) to a minimum - each wall or ceiling can reduce your D-Link *Air*Pro Wireless product's range from 3-90 feet (1-30 meters.) Position your receiving devices so that the number of walls or ceilings is minimized.
2. Be aware of the direct line between routers and computers. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Try to make sure that devices are positioned so that the signal will travel straight through a wall or ceiling for better reception.
3. Building Materials make a difference - a solid metal door or aluminum studs may have a negative effect on range. Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.
4. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.

Getting Started

Right out of the box, with its default settings, the DI-754 will connect with other D-Link *Air*Pro products.

With a single IP Address from your Broadband Internet Service provider you can share the Internet with all the computers on your local network, without sacrificing speed or security, using D-Link DI-754 Wireless Router.

IP ADDRESS

Note: If you are using a DHCP-capable router in your network setup, such as the DI-754, you will not need to assign a static IP Address.

If you need to assign IP Addresses to the computers on the network, please remember that the **IP Address for each computer must be in the same IP Address range as all the computers in the network**, and the Subnet mask must be exactly the same for all the computers in the network.

For example: If the first computer is assigned an IP Address of 192.168.0.2 with a Subnet Mask of 255.255.255.0, then the second computer can be assigned an IP Address of 192.168.0.3 with a Subnet Mask of 255.255.255.0, etc.

IMPORTANT: If computers or other devices are assigned the same IP Address, one or more of the devices may not be visible on the network.

An **Infrastructure** wireless network contains an Access Point. *(Note: The DI-754 has a built-in 802.11a Access Point.)* The **Infrastructure Network** example, shown here, contains the following D-Link network devices:

A wireless Router - **D-Link *Air*Pro DI-754**
A laptop computer with a wireless adapter - **D-Link *Air*Pro DWL-A650 or *Air*Plus DWL-650+**
A desktop computer with a wireless adapter - **D-Link *Air*Pro DWL-A520 or AirPlus DWL-520+**
A Cable modem - **D-Link DCM-200**

Note: to utilize the 802.11b connection to your network, please install the D-Link DWL-650+ into the slot on the back of the DI-754. Please make sure that the DWL-650+ is fully inserted into the slot. (See the Quick Installation Guide for the DWL-650+.)

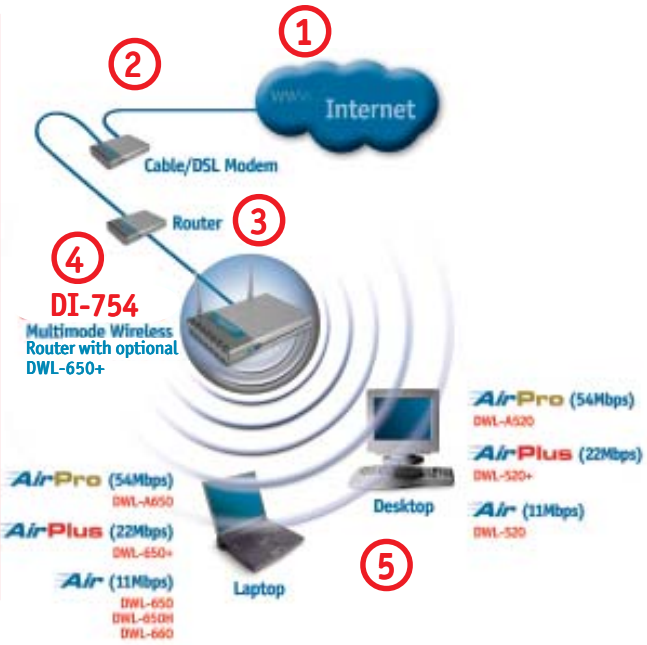
Getting Started

Please refer to the following sections of this manual for additional information about setting up a network:

Networking Basics - learn how to check and assign your IP Address; share printers and files.

Using the Configuration Menu - learn the settings for the DI-754, using the web-based interface.

Troubleshooting - learn how to check for common installation issues and other tips for troubleshooting.



*Please remember that **D-Link AirPro** wireless devices are pre-configured to connect together, right out of the box, with the default settings.*

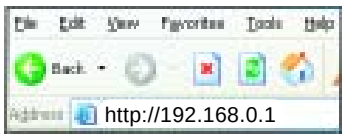
For a typical wireless setup at home (as shown above), please do the following:

1. You will need broadband Internet access (Cable/DSL)
2. Consult with your Cable/DSL provider for proper installation of the modem
3. Connect the Cable or DSL modem to the DI-754 broadband router (*see the Quick Installation Guide included with the DI-754.*)
4. If you are connecting a desktop computer to your network, you can install the D-Link *Air*Pro DWL-A520 (or the DWL-520+) wireless PCI adapter into an available PCI slot. (See the Quick Installation Guide included with the DWL-A520, DWL-520+ or DWL-520.)
5. If you are connecting a laptop computer to your network, install the drivers for the wireless cardbus adapter (**D-Link *Air*Pro DWL-A650**) into a laptop computer. (*See the Quick Installation Guide included with the DWL-A650, DWL-650+, or DWL-650.*)

Using the Configuration Menu

Before you configure the DI-754, you will run the **Setup Wizard** by inserting the CD-ROM that came with the DI-754 and clicking on **Configure the DI-754**. (Please see the Quick Installation Guide that came with the product.) After you have completed the Setup Wizard you can access the Configuration menu at any time by opening the web browser and typing in the IP Address of the DI-754. The DI-754 default IP Address is shown below:

- Open the web browser
- Type in the **IP Address** of the Router

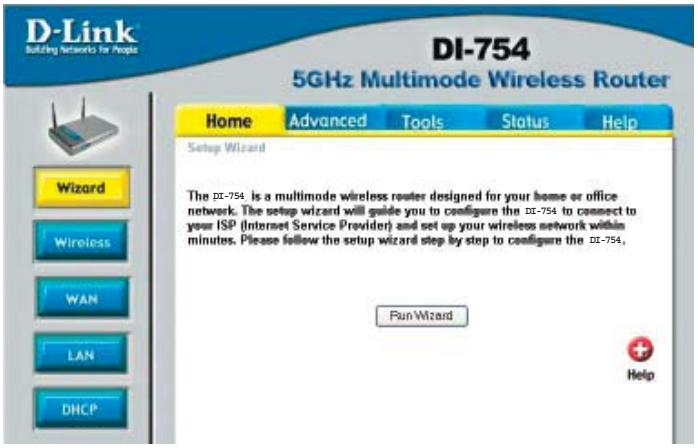


Note: if you have changed the default IP Address assigned to the DI-754, make sure to enter the correct IP Address.

- Type **admin** in the **User Name** field
- Leave the **Password** blank
- Click **Next**

Home > Wizard

The **Home>Wizard** screen will appear. Please refer to the *Quick Installation Guide* for more information regarding the Setup Wizard.



Using the Configuration Menu

Home > Wireless > 802.11a

Wireless Settings- choose 802.11a or 802.11b+. Here, 802.11a is selected.

SSID- by default the SSID is set to **default**. All devices on the network must share the same SSID. If you change the default setting, the SSID may be up to 32 characters long.

Channel- **52** is the default channel for 802.11a. All devices on the network must share the same channel. *Note: Wireless adapters will automatically scan and match the channel of the Access Point.*

Turbo Mode- select **ON** or **OFF.** *(Note: If you enable Turbo mode on the DI-754 make sure to also enable encryption on all 802.11a wireless clients or wireless connection will not be established.)*

WEP- select **Enabled** or **Disabled. Disabled** is the default setting. *(Note: If you enable encryption on the DI-754 make sure to also enable encryption on all 802.11a wireless clients or wireless connection will not be established.)*

WEP Encryption- select the level of encryption desired: 64, 128 or 152-bit

WEP *(Wired Equivalent Privacy)*
Provides security by encrypting data during transmission

Key Type- select **HEX** or **ASCII**

Hexadecimal *digits consist of the numbers 0-9 and the letters A-F*
ASCII *(American Standard Code for Information Interchange) is a code for representing English letters as numbers from 0-127*

Keys 1-4- input up to 4 WEP keys; select the one you wish to use.

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Home > Wireless > 802.11b+

Wireless Settings- choose 802.11a or 802.11b+. Here, 802.11b+ is selected.

SSID- "default" is the default setting. All devices on the network must share the same SSID. The SSID may be up to 32 characters long.

Channel- **6** is the default channel for 802.11b+. All devices on the network must share the same channel. *(Note: The wireless adapters will automatically scan and match the wireless setting.)*

WEP- select **Enabled** or **Disabled. Disabled** is the default setting. *(Note: If you enable encryption on the DI-754 make sure to also enable encryption on all 802.11a wireless clients or wireless connection will not be established.)*

WEP Encryption- select the level of encryption desired: 64, 128 or 256-bit

Key Type- select **HEX** or **ASCII**

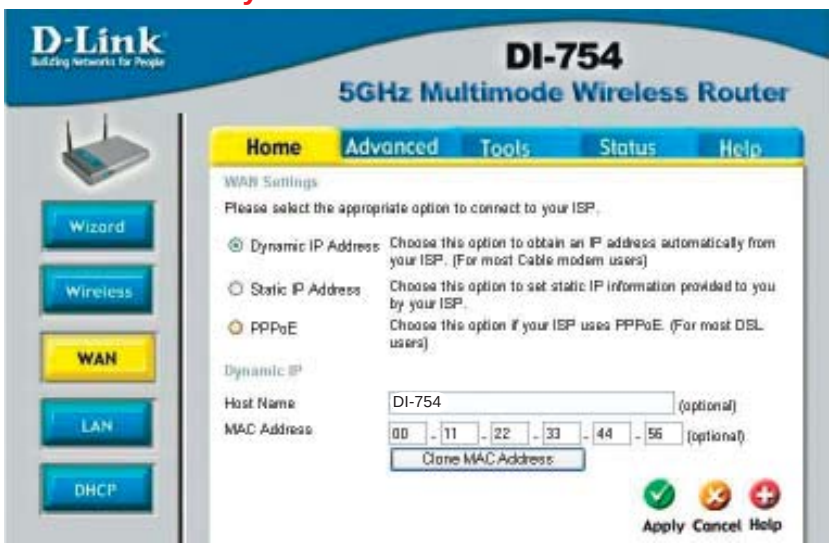
Passphrase- when you select Key Type: **ASCII**, you can enter a **Passphrase** for any or all of Keys 1-4

Keys 1-4- input up to 4 WEP keys; select the one you wish to use.

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Home > WAN > Dynamic IP Address



Dynamic IP Address- most Cable modem users will select this option to obtain an IP Address automatically from their ISP (Internet Service Provider).

Host Name- this is optional, but may be required by some ISPs. The default host name is the device name of the Router and may be changed.

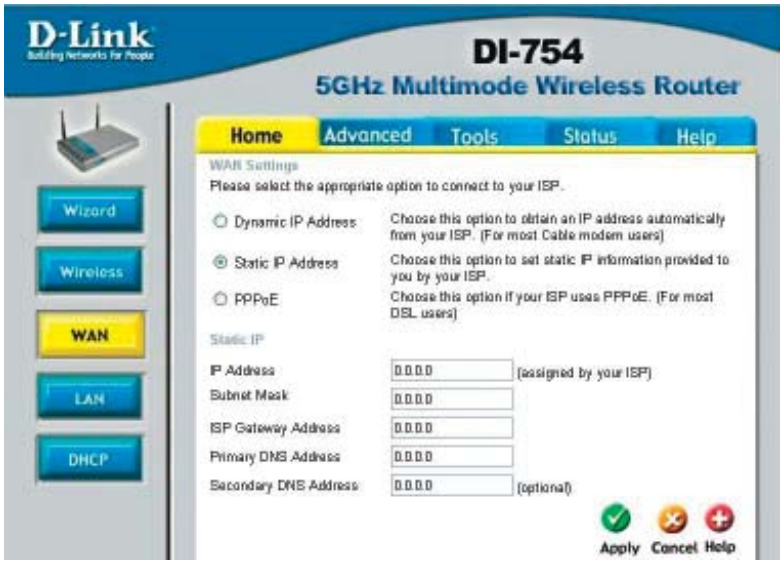
MAC Address- the default MAC Address is set to the WAN's physical interface MAC address on the Router.

Clone MAC Address- click on **Clone Mac Address** to automatically enter the MAC address of the Ethernet card in your computer into the **MAC Address** field. Some ISPs *(Internet Service Providers)* restrict access to their network unless you are using the specific MAC address of the ethernet adapter originally installed by the ISP.

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Home > WAN > Static IP Address



Static IP Address- select this option to set static IP information provided to you by your ISP.

IP Address- input the IP Address provided by your ISP

Subnet Mask- input your Subnet mask. (All devices in the network must have the same subnet mask.)

ISP Gateway Address- input the Gateway address

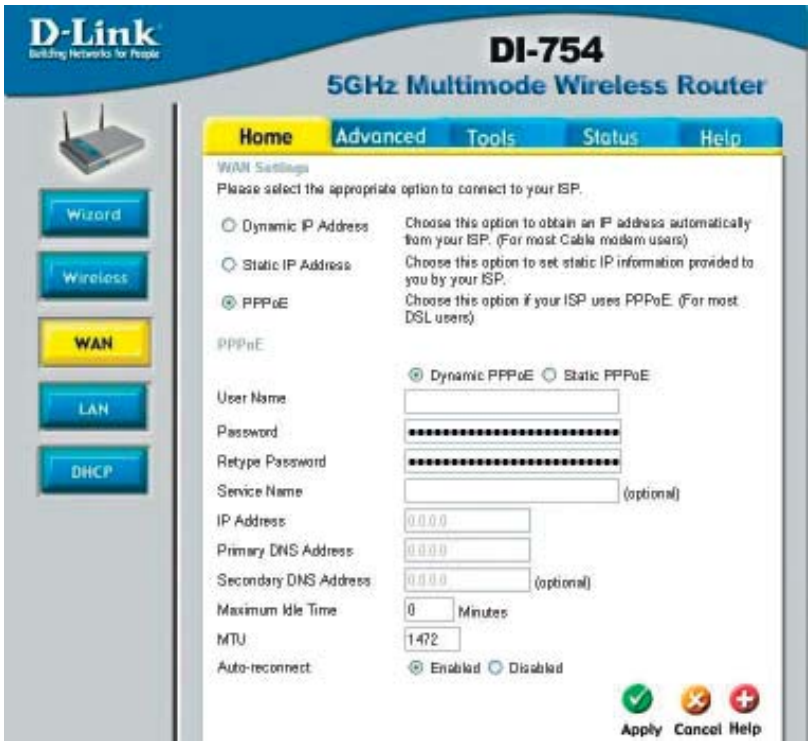
Primary DNS Address- input the address provided by your ISP

Secondary DNS Address- this is optional

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Home > WAN > PPPoE



Please be sure to remove any existing PPPoE client software installed on your computers.

PPPoE- Choose this option if your ISP uses PPPoE. (Most DSL users will select this option.)
Dynamic PPPoE- receive an IP Address automatically from your ISP.
or
Static PPPoE-you have an assigned (static) IP Address.

User Name- your PPPoE username provided by your ISP.

Password- your PPPoE password provided by your ISP.

Retype Password- re-enter the PPPoE password

Service Name- enter the Service Name provided by your ISP (optional).

IP Address- this option is only available for Static PPPoE. Enter the static IP Address for the PPPoE connection.

Using the Configuration Menu

Home > WAN > PPPoE *continued*

Primary DNS Address- get this info from your ISP

Secondary DNS Address- optional

Maximum Idle Time- enter a maximum idle time during which internet connection is maintained during inactivity. To disable this feature, enter zero or enable *Auto-reconnect.*

MTU- Maximum Transmission Unit-1492 is default-you may need to change the MTU to conform with your ISP.

Auto-reconnect- if enabled, the DI-754 will automatically connect to your ISP after your system is restarted or if the connection is dropped.

Apply- click **Apply** to save the changes.

Home > LAN

LAN is short for Local Area Network. This is considered your internal network. These are the IP settings of the LAN interface for the DI-754. These settings may be referred to as Private settings. You may change the LAN IP address if needed. The LAN IP address is private to your internal network and cannot be seen on the Internet.

IP Address- the IP address of the LAN interface. The default IP address is: **192.168.0.1**

Subnet Mask- the subnet mask of the LAN interface. The default subnet mask is **255.255.255.0**

Local optional

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Home > DHCP

DHCP stands for *Dynamic Host Control Protocol*. The DI-754 has a built-in DHCP server. The DHCP Server will automatically assign an IP address to the computers on the LAN/private network. Be sure to set your computers to be DHCP clients by setting their TCP/IP settings to "Obtain an IP Address Automatically." When you turn your computers on, they will automatically load the proper TCP/IP settings provided by the DI-754. The DHCP Server will automatically allocate an unused IP address from the IP address pool to the requesting computer. You must specify the starting and ending address of the IP address pool.

DHCP Server- select **Enabled** or **Disabled.** The **default** setting is **Enabled.**

Starting IP Address- the starting IP address for the DHCP server's IP assignment

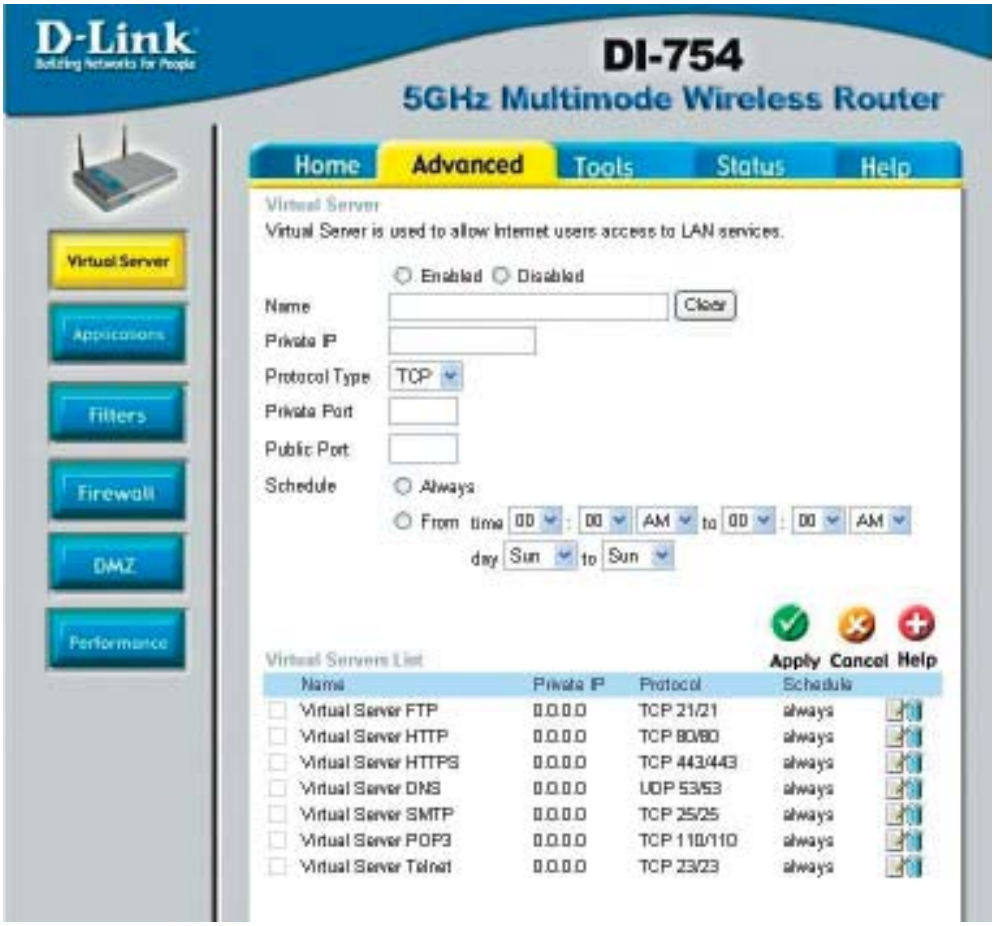
Ending IP Address- the ending IP address for the DHCP server's IP assignment

Lease Time- enter the Lease time. The default setting is one hour

Apply- click **Apply** to save the changes

Using the Configuration Menu

Advanced > Virtual Server



The DI-754 can be configured as a virtual server so that remote users accessing Web or FTP services via the public IP address can be automatically redirected to local servers in the LAN (Local Area Network).

The DI-754 firewall feature filters out unrecognized packets to protect your LAN network so all computers networked with the DI-754 are invisible to the outside world. If you wish, you can make some of the LAN computers accessible from the Internet by enabling *Virtual Server.* Depending on the requested service, the DI-754 redirects the external service request to the appropriate server within the LAN network.

The DI-754 is also capable of port-redirection meaning incoming traffic to a particular port may be redirected to a different port on the server computer.

Each virtual service that is created will be listed at the bottom of the screen in the Virtual Servers List. There are pre-defined virtual services already in the table. You may use them by enabling them and assigning the server IP to use that particular virtual service.

Virtual Server- select **Enabled** or **Disabled**

Name- enter the name referencing the virtual service

Private IP- the server computer in the LAN (Local Area Network) that will be providing the virtual services.

Protocol Type- the protocol used for the virtual service

Private Port- the port number of the service used by the Private IP computer

Public Port- the port number on the WAN (Wide Area Network) side that will be used to access the virtual service.

Schedule- The schedule of time when the virtual service will be enabled. The schedule may be set to **Always**, which will allow the particular service to always be enabled. If it is set to **Time**, select the time frame for the service to be enabled. If the system time is outside of the scheduled time, the service will be disabled.

Apply- click **Apply** to save the changes.

Example #1:
If you have a Web server that you wanted Internet users to access at all times, you would need to enable it. Web (HTTP) server is on LAN (Local Area Network) computer 192.168.0.25. HTTP uses port 80, TCP.
Name: Web Server
Private IP: 192.168.0.25
Protocol Type: TCP
Private Port: 80
Public Port: 80
Schedule: always

Using the Configuration Menu

Advanced > Virtual Server *continued*

Virtual Servers List

	Name	Private IP	Protocol	Schedule	
☒	Virtual Server HTTP	192.168.0.25	TCP 80/80	always	

Click on this icon to edit the virtual service

Click on this icon to delete the virtual service

Example #2:
If you have an FTP server that you wanted Internet users to access by WAN port 2100 and only during the weekends, you would need to enable it as such. FTP server is on LAN computer 192.168.0.30. FTP uses port 21, TCP.

Name: FTP Server
Private IP: 192.168.0.30
Protocol Type: TCP
Private Port: 21
Public Port: 2100

Schedule: From: 01:00AM to 01:00AM, Sat to Sun

All Internet users who want to access this FTP Server must connect to it from port 2100. This is an example of port redirection and can be useful in cases where there are many of the same servers on the LAN network.

Using the Configuration Menu

Advanced > Applications

Some applications require multiple connections, such as Internet gaming, video conferencing, Internet telephony and others. These applications have difficulties working through NAT (Network Address Translation). Special Applications makes some of these applications work with the DI-754. If you need to run applications that require multiple connections, specify the port normally associated with an application in the “Trigger Port” field, select the protocol type as TCP or UDP, then enter the public ports associated with the trigger port to open them for inbound traffic.

The DI-754 provides some predefined applications in the table on the bottom of the web page. Select the application you want to use and enable it.

Note! *Only one PC can use each Special Application tunnel.*

Name: this is the name referencing the special application.

Trigger Port: this is the port used to trigger the application. It can be either a single port or a range of ports.

Trigger Type: this is the protocol used to trigger the special application.

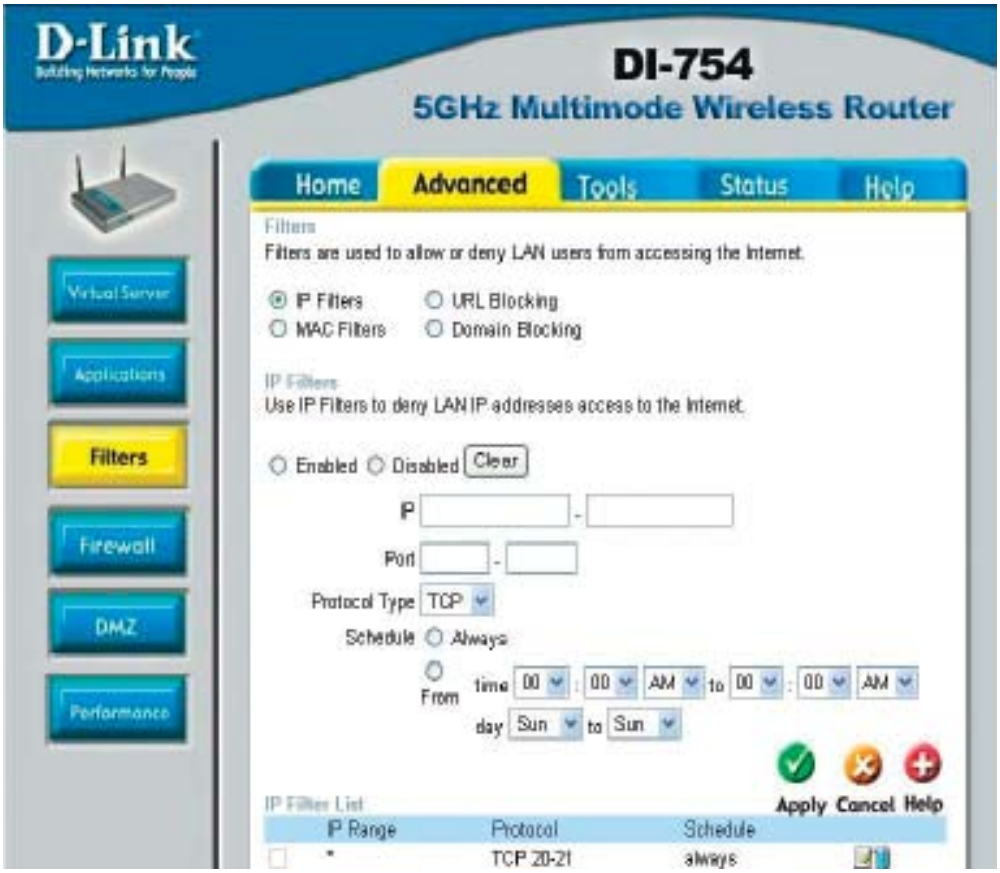
Public Port: this is the port number on the WAN side that will be used to access the application. You may define a single port or a range of ports. You can use a comma to add multiple ports or port ranges.

Public Type: this is the protocol used for the special application.

Apply: click **Apply** to save the changes

Using the Configuration Menu

Advanced > Filters > IP Filters



Filters are used to deny or allow LAN (Local Area Network) computers from accessing the Internet. The DI-754 can be setup to deny internal computers by their IP or MAC addresses. The DI-754 can also block users from accessing restricted web sites.

IP Filters use IP Filters to deny LAN IP addresses from accessing the Internet. You can deny specific port numbers or all ports for the specific IP address.

IP: the IP address of the LAN computer that will be denied access to the Internet.

Port: the single port or port range that will be denied access to the Internet.

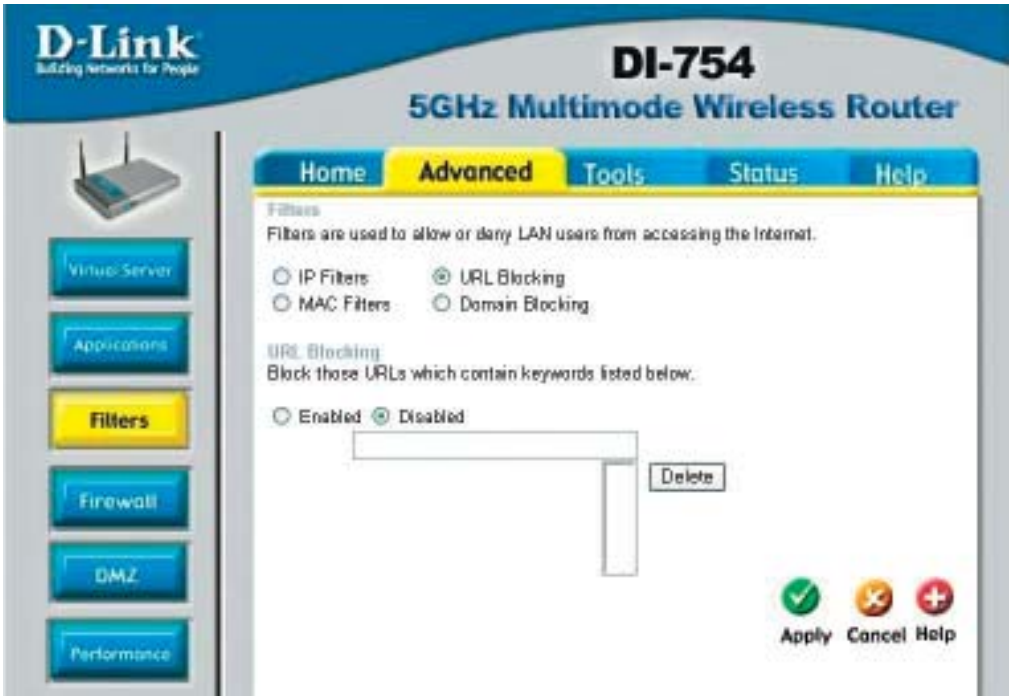
Protocol Type: select the protocol type

Schedule: this is the schedule of time when the IP Filter will be enabled.

Apply: click **Apply** to save changes.

Using the Configuration Menu

Advanced > Filters > URL Blocking



URL Blocking is used to deny LAN computers from accessing specific web sites by its URL. A URL is a specially formatted text string that defines a location on the Internet. If any part of the URL contains the blocked word, the site will not be accessible and the web page will not display.

Filters- select the filter you wish to use; in this case, **URL Blocking** was chosen.

URL Blocking- select Enabled or Disabled.

Keywords- block URLs which contain keywords listed below. Enter the keywords in this space.

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Advanced > Filters > MAC Filters

Use MAC (Media Access Control) Filters to allow or deny LAN (Local Area Network) computers by their MAC addresses from accessing the Internet. You can either manually add a MAC address or select the MAC address from the list of clients that are currently connected to the Broadband Router.

Filters- select the filter you wish to use; in this case, **MAC filters** was chosen.

MAC Filters- choose **Disable** MAC filters; **allow** MAC addresses listed below; or **deny** MAC addresses listed below.

Name- enter the name here.

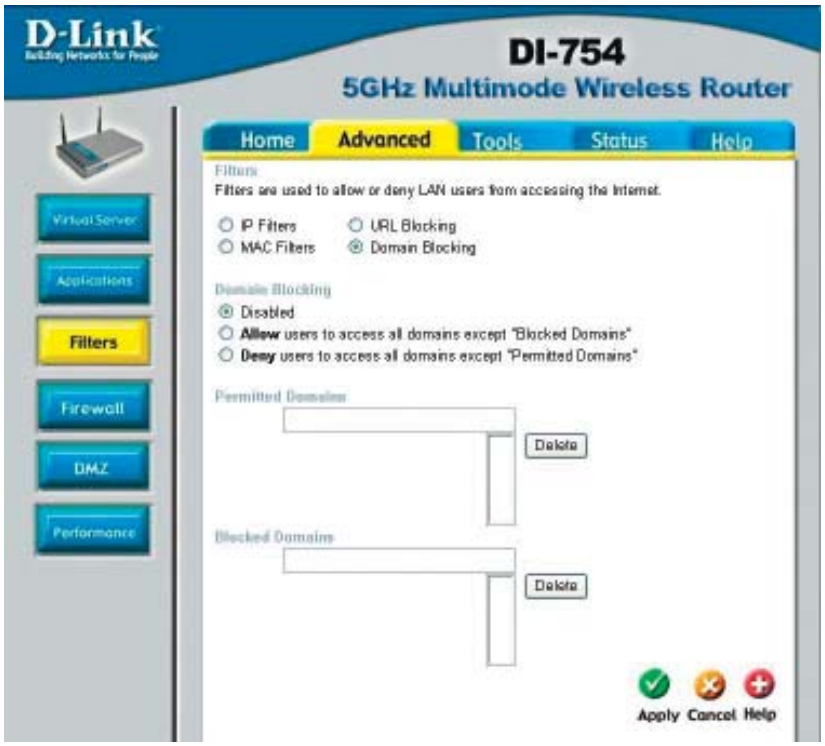
MAC Address- enter the MAC Address.

DHCP Client- select a DHCP client from the pull-down list; click **Clone** to copy that MAC Address

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Advanced > Filters > Domain Blocking



Domain Blocking is used to allow or deny LAN (Local Area Network) computers from accessing specific domains on the Internet. Domain blocking will deny all requests to a specific domain such as http and ftp. It can also allow computers to access specific sites and deny all other sites.

Filters- select the filter you wish to use; in this case, **Domain Blocking** was chosen.

Domain Blocking:

Disabled- select **Disabled** to disable **Domain Blocking**

Allow- allows users to access all domains except **Blocked Domains**

Deny- denies users access to all domains except **Permitted Domains**

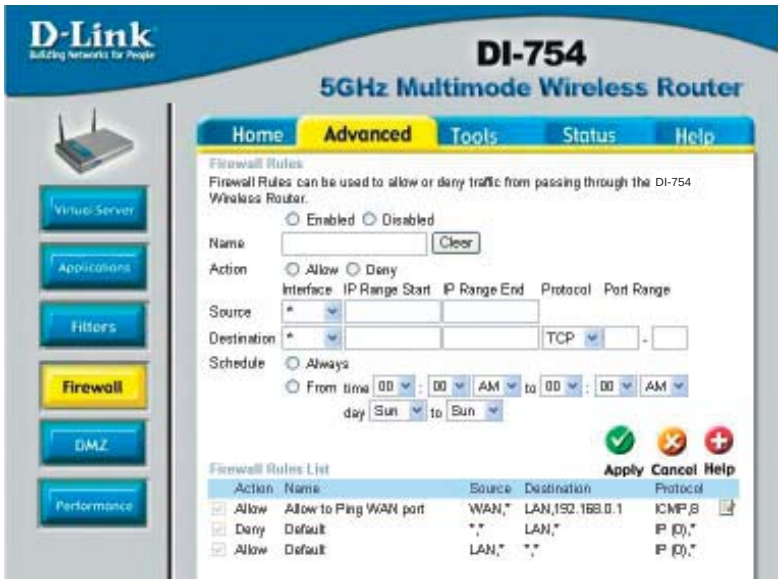
Permitted Domains- enter the **Permitted Domains** in this field

Blocked Domains- enter the **Blocked Domains** in this field

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Advanced > Firewall



Firewall Rules is an advance feature used to deny or allow traffic from passing through the DI-754. It works in the same way as IP Filters with additional settings. You can create more detailed access rules for the DI-754. When virtual services are created and enabled, it will also display in Firewall Rules. Firewall Rules contains all network firewall rules pertaining to IP (Internet Protocol).

In the Firewall Rules List at the bottom of the screen, the priorities of the rules are from top (highest priority) to bottom (lowest priority.)

Note: The DI-754 MAC Address filtering rules have precedence over the Firewall Rules.

Firewall Rules-	**enable** or **disable** theFirewall
Name-	enter the name
Action-	**allow** or **deny**
Source-	enter the **IP Address range**
Destination-	enter the **IP Address range**; the **Protocol**; and the **Port Range**
Schedule-	select **Always** or enter the **Time**.
Apply-	click **Apply** to save the changes.

Using the Configuration Menu

Advanced > DMZ

If you have a client PC that cannot run Internet applications properly from behind the DI-754, then you can set the client up to unrestricted Internet access. It allows a computer to be exposed to the Internet. This feature is useful for gaming purposes. Enter the IP address of the internal computer that will be the DMZ host. Adding a client to the DMZ (Demilitarized Zone) may expose your local network to a variety of security risks, so only use this option as a last resort.

DMZ- **enable** or **disable** the DMZ. The DMZ (Demilitarized Zone) allows a single computer to be exposed to the internet. By **default** the DMZ is **disabled**.

IP Address- enter the **IP Address** of the computer to be in the **DMZ**

Apply- click **Apply** to save the changes.

Using the Configuration Menu

Advanced > Performance > 802.11a

Wireless Performance- select **802.11a** or **802.11b+**. Here, **802.11a** has been chosen. This screen displays the wireless performance features of the Access Point portion of the DI-754.

Data Rate- **best** is the default selection

Transmit Power- **full** is the default selection.

Beacon interval- beacons are packets sent by an Access Point to synchronize a wireless network. Specify a value. **100** is the default setting and is recommended.

RTS Threshold- this value should remain at its default setting of **2346**. If inconsistent data flow is a problem, only a minor modification should be made.

Fragmentation- this value should also remain at its default setting of **2346**

DTIM interval- (**D**elivery **T**raffic **I**ndication **M**essage) **1** is the default setting. A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

Authentication- select **Open system** or **Shared Key**

Open System - the DI-754 will be visible to all devices on the network. This is the default setting

Shared Key - in this mode, in order to access the DI-754 on the network, the device must be listed in the MAC Address Control List

Apply- click **Apply** to save the changes

Using the Configuration Menu

Advanced > Performance > 802.11b+

Wireless Performance- Select **802.11a** or **802.11b+. 802.11b+** is selected here. Displayed in this window are the Wireless Performance features for the Access Point portion of the DI-754.

Beacon Interval- 100 is the default setting

RTS Threshold- 2432 is the default setting

Fragmentation- 2346 is the default setting

DTIM interval- 3 is the default setting

Basic Rates- choose from*1-2Mbps*; *1,2,5.5,11 Mbps*; or *1,2,5.5,11,22 Mbps*

TX Rates- choose from among the same ranges as those listed in the *Basic Rates*,above.

Preamble Type- select **Short** or **Long Preamble**

Authentication- select **Open System**; **Shared Key** or **Auto**

Apply- click **Apply** to save changes

Using the Configuration Menu

Tools> Admin

User- **admin** is the **User name**

Password- leave this field blank

Remote Management:

Select Enabled or **Disabled**
Input the IP Address
Input the Port number

Apply- click **Apply** to save the changes

Using the Configuration Menu

Tools > Time

Time settings- in this window you can choose the **time zone**; **set the time**; and **enable** or **disable** *Daylight Savings Time*.

Default NTP Server- NTP is short for *Network Time Protocol.* NTP synchronizes computer clock times in a network of computers.
This field is optional.

Using the Configuration Menu

Tools > System

System Settings

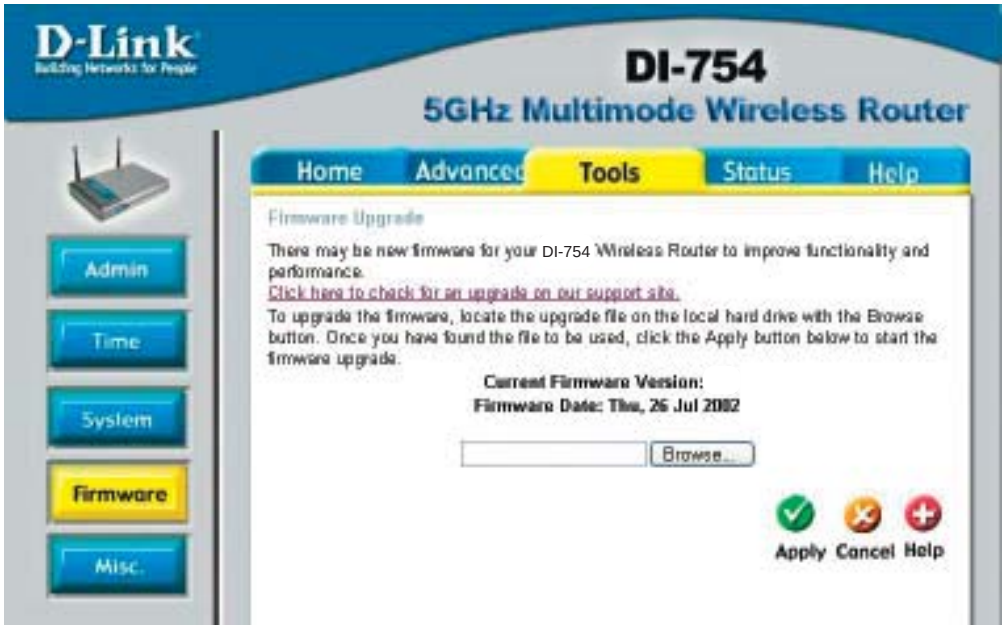
Save Settings to Local Hard Drive- click **Save** to save the current settings to the local Hard Drive

Load Settings from Local Hard Drive- click **Browse** to find the settings, then click **Load**

Restore to Factory Default Settings- click **Restore** to restore the factory default settings

Using the Configuration Menu

Tools > Firmware

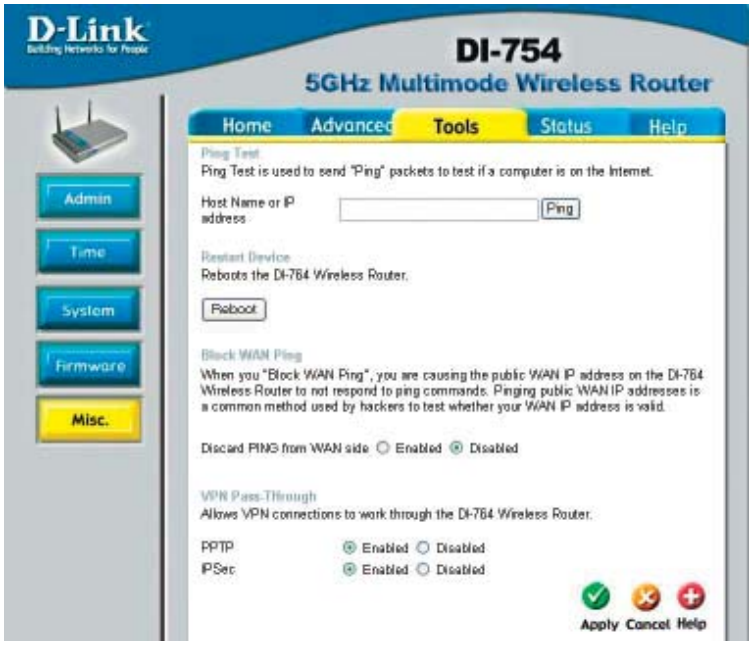


Firmware Upgrade- click on the link in this screen to find out if there is an updated firmware; if so, download the new firmware to your hard drive.

Browse- after you have downloaded the new firmware, click **Browse** in this window to locate the firmware update on your hard drive. Click **Apply** to complete the firmware upgrade.

Using the Configuration Menu

Tools > Misc



Ping Test- the Ping Test is used to send Ping packets to test if a computer is on the Internet. Enter the IP Address that you wish to Ping, and click **Ping**

Restart Device- click **Reboot** to restart the DI-754

Block WAN Ping- if you choose to block WAN Ping, the WAN IP Address of the DI-754 will not respond to pings. Blocking the Ping may provide some extra security from hackers.

Discard Ping from WAN side- click **Enabled** to block the WAN ping

VPN Pass Through- the DI-754 supports VPN (Virtual Private Network) pass-through for both PPTP (Point-to-Point Tunneling Protocol) and IPSec (IP Security). Once VPN pass-through is enabled, there is no need to open up virtual services. Multiple VPN connections can be made through the DI-754. This is useful when you have many VPN clients on the LAN network.

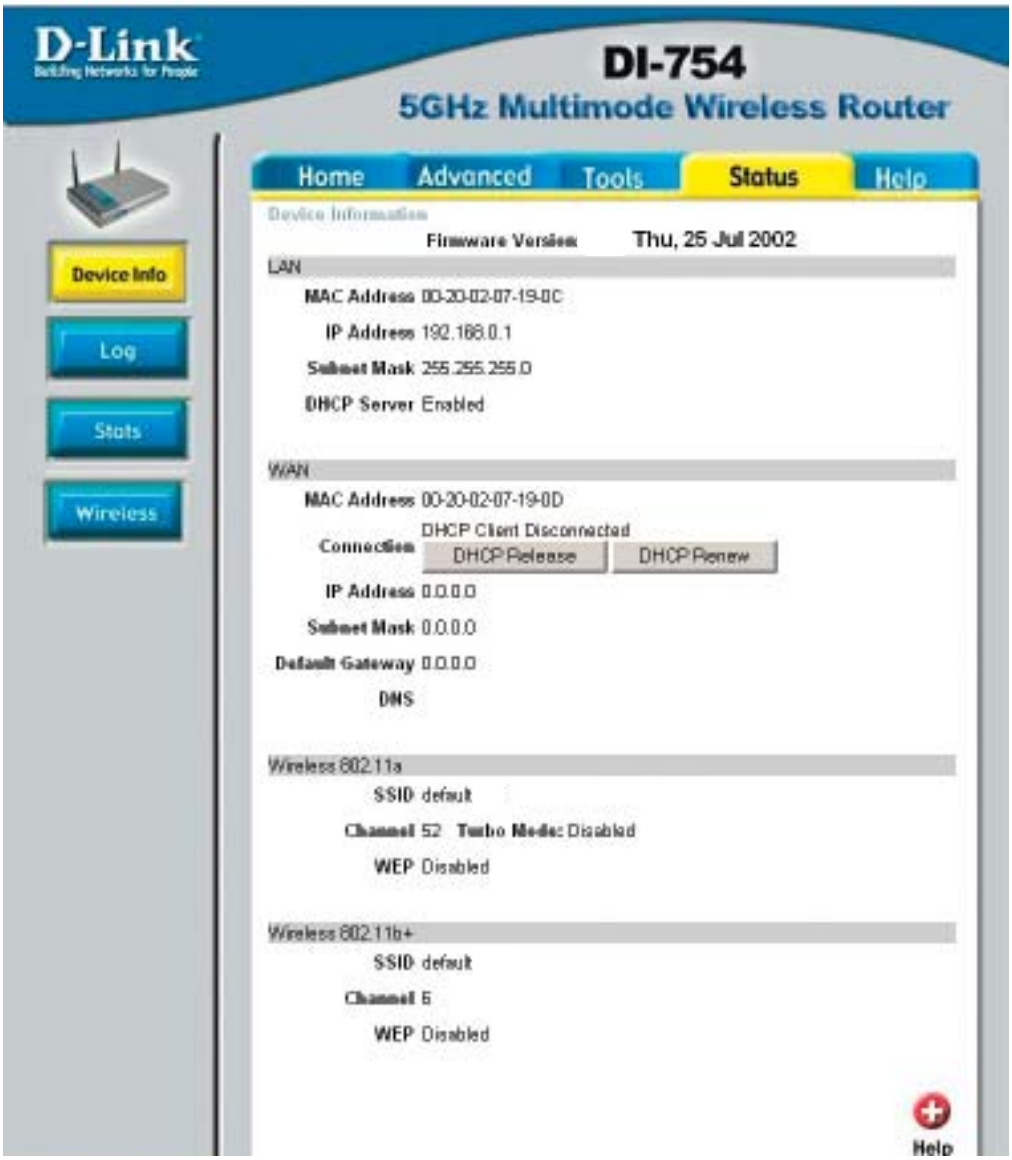
PPTP- select **Enabled** or **Disabled**

IPSec- select **Enabled** or **Disabled**

Apply- click **Apply** to save changes

Using the Configuration Menu

Status > Device Info



Device Information- This screen displays information about the DI-754

Using the Configuration Menu

Status > Log

View Log- this screen displays the activity on the DI-754

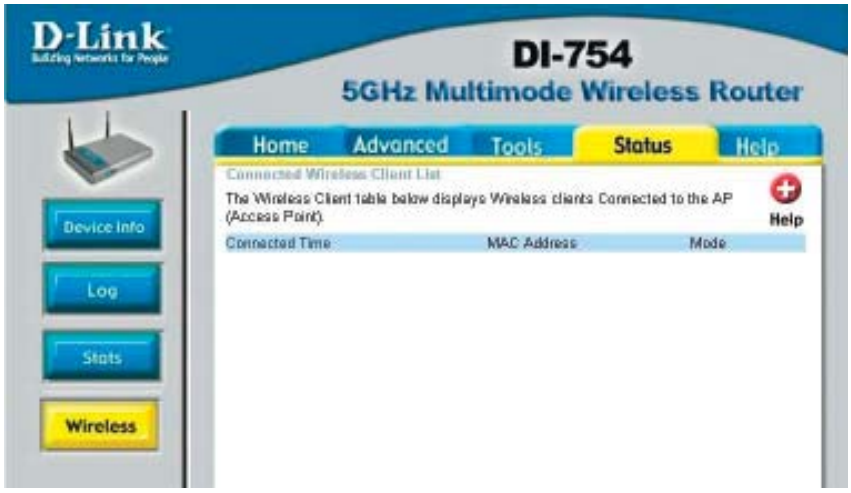
Log Settings- for advanced features, click on **Log Settings**

Using the Configuration Menu

Status > Stats

Traffic Statistics- displays the receive and transmit packets that are passing through the DI-754. Click on **Refresh** or **Reset**, for the most recent information.

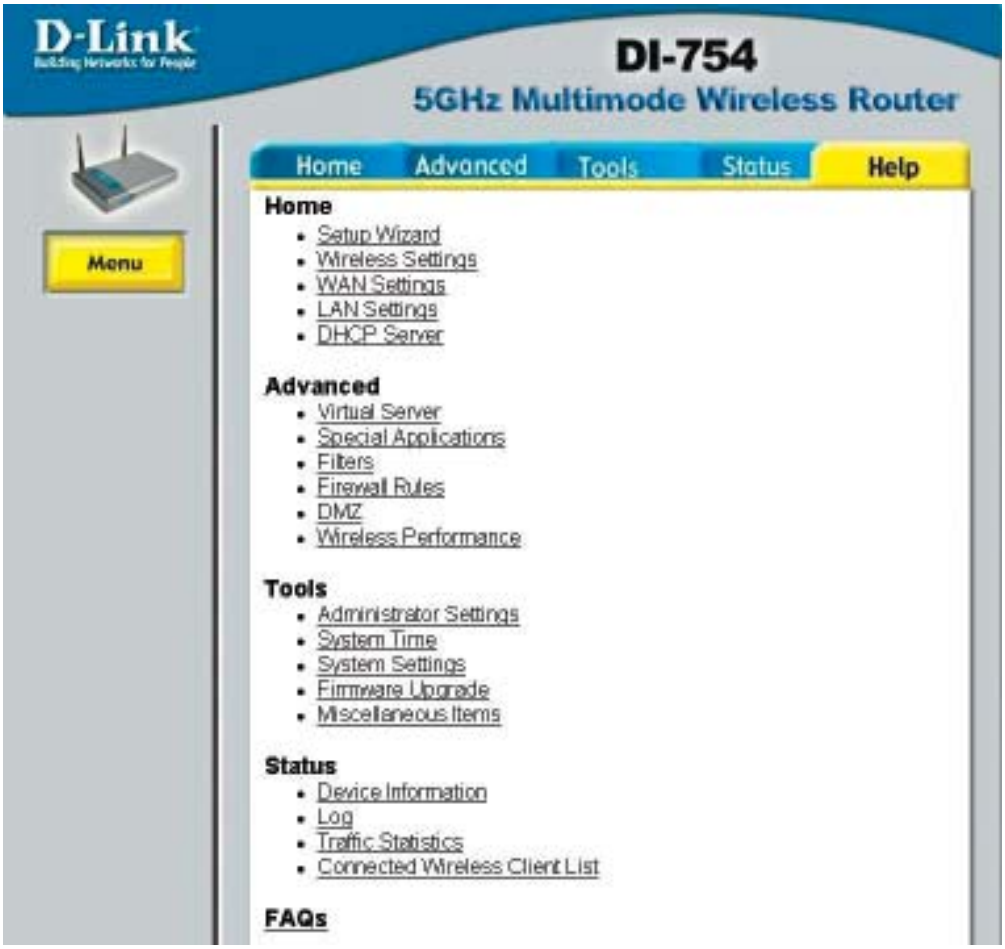
Status > Wireless



Connected Wireless Client List- displays the wireless clients that are connected to the Access Point function of the DI-754.

Using the Configuration Menu

Help



Help- displays the complete **Help** menu. For help at anytime, click the **Help** tab in the Configuration menu.

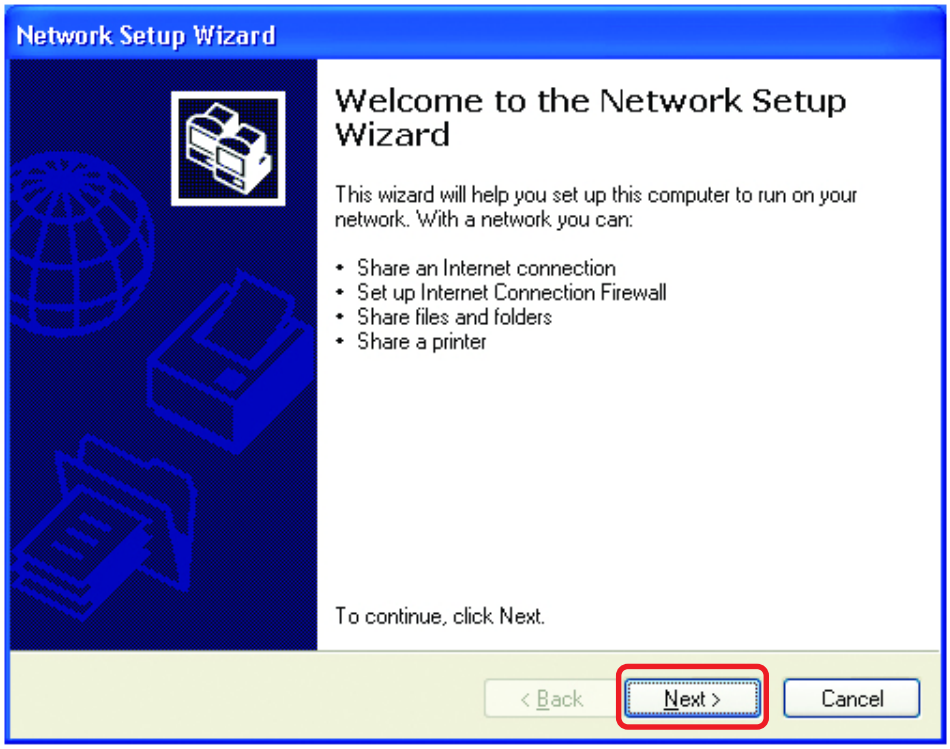
Networking Basics

Using the Network Setup Wizard in Windows XP

In this section you will learn how to establish a network at home or work, using **Microsoft Windows XP.**

Note: Please refer to websites such as http://www.homenethelp.com and http://www.microsoft.com/windows2000 for information about networking computers using Windows 2000, ME or 98.

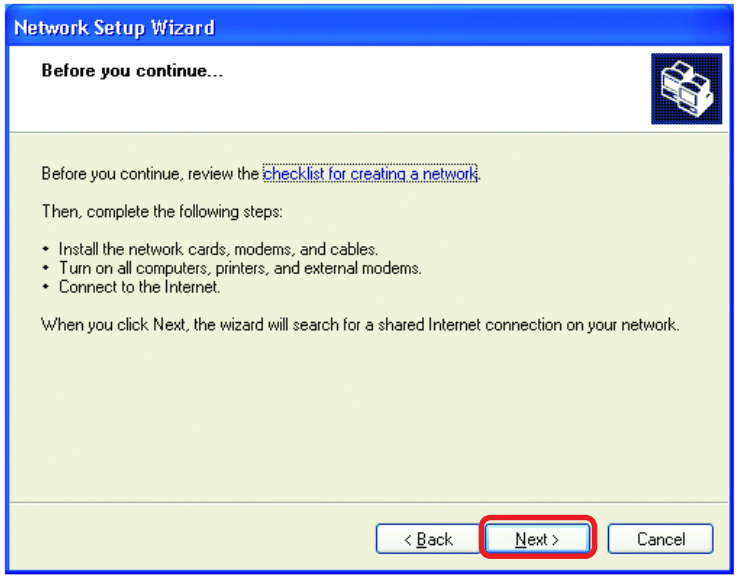
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**



When this screen appears, **Click Next.**

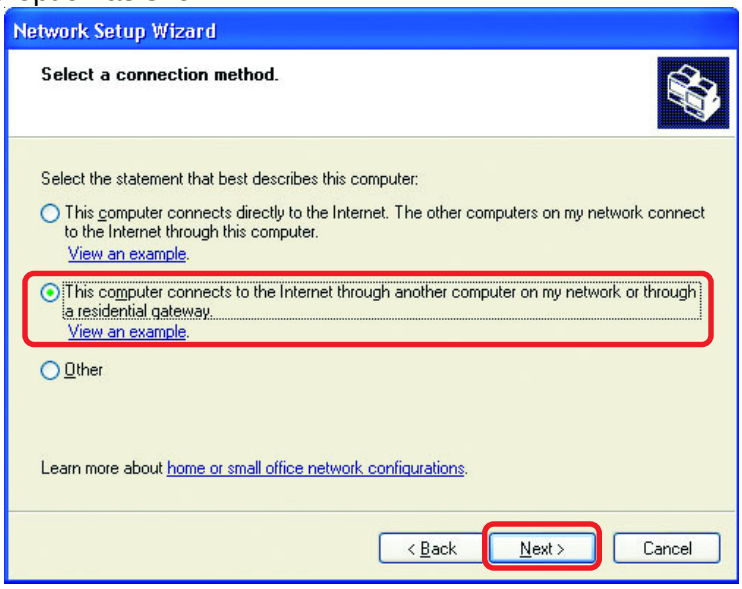
Networking Basics

Please follow all the instructions in this window:



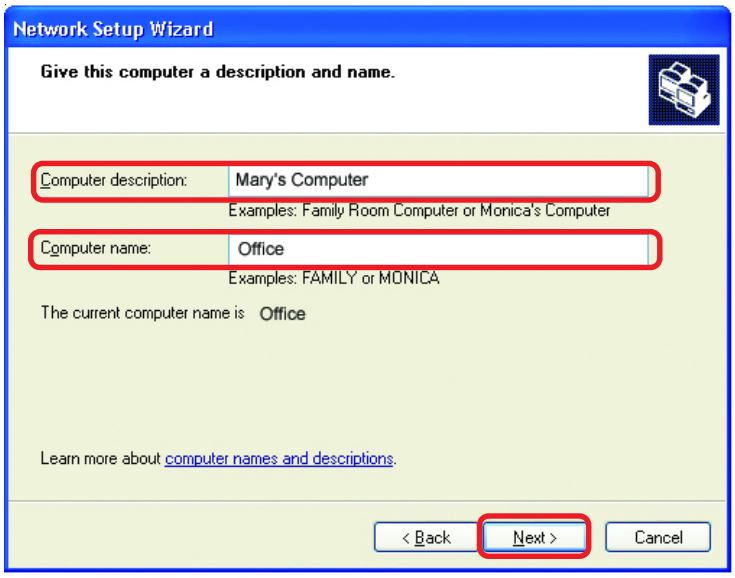
Click **Next**

In the following window, select the best description of your computer. If your computer connects to the internet through a gateway/router, select the second option as shown.



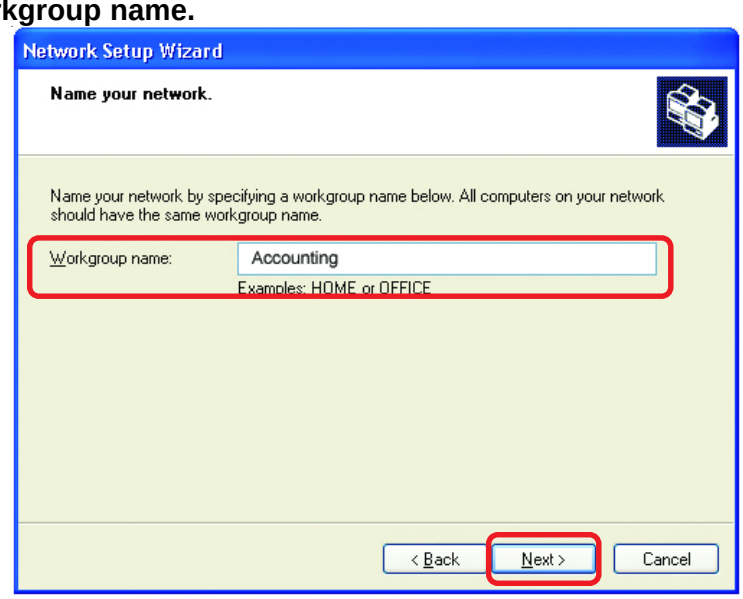
Click **Next**

Enter a **Computer description** and a **Computer name** (optional.)



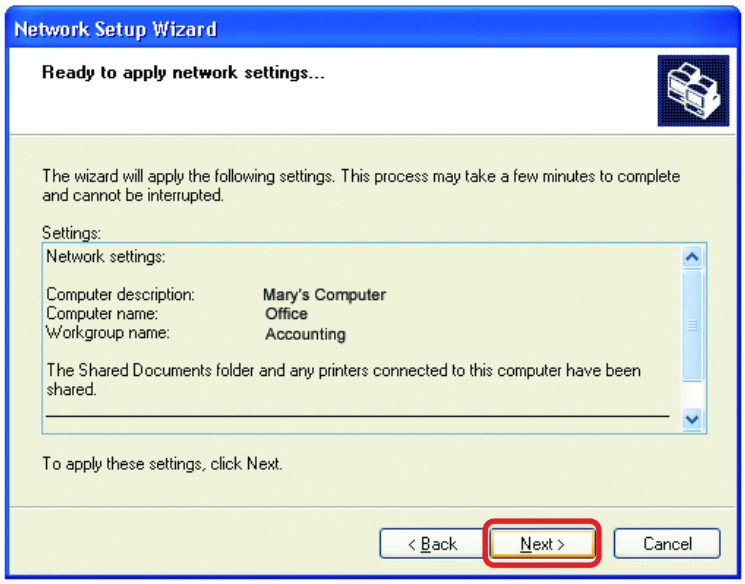
Click **Next**

Enter a **Workgroup** name. All computers on your network should have the same **Workgroup name.**



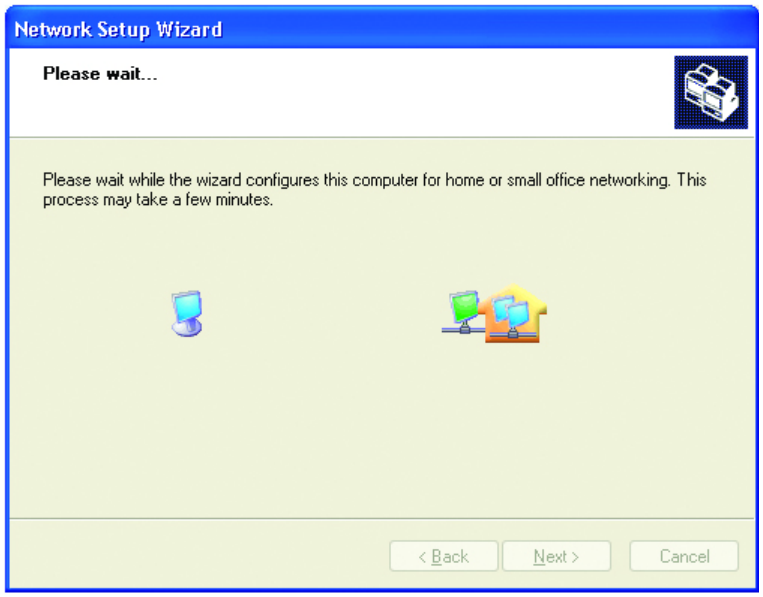
Click **Next**

Please wait while the **Network Setup Wizard** applies the changes.

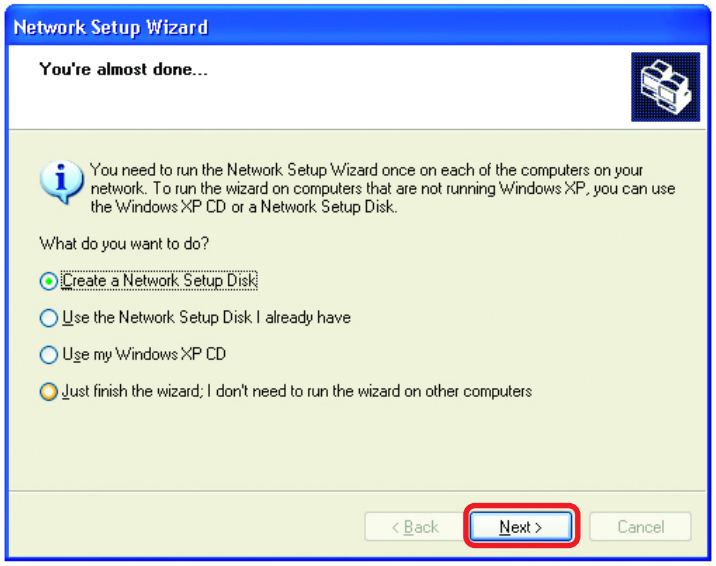


When the changes are complete, click **Next**.

Please wait while the **Network Setup Wizard** configures the computer. This may take a few minutes.

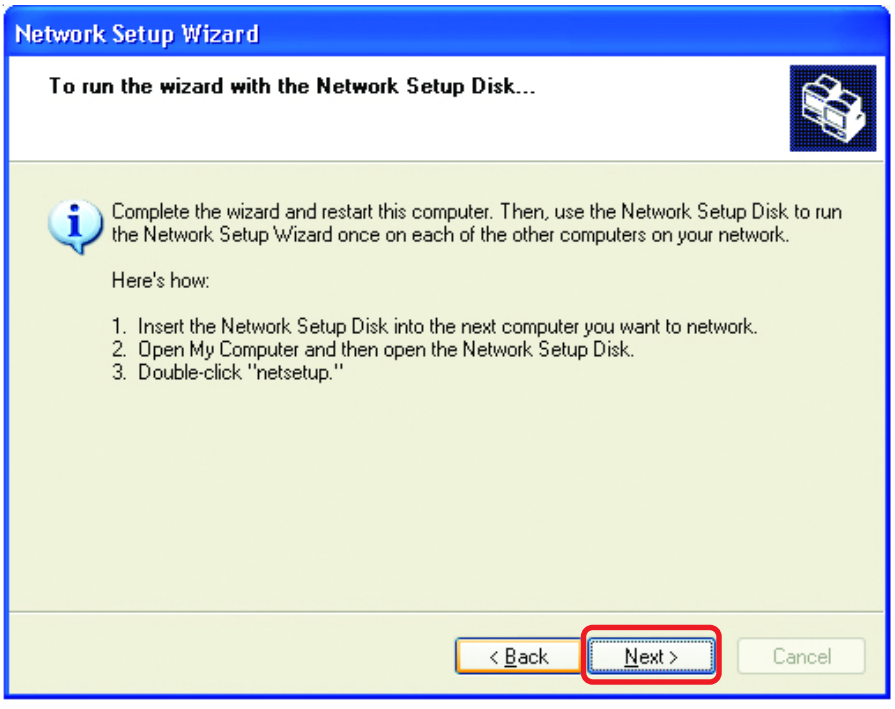


In the window below, select the option that fits your needs. In this example, **Create a Network Setup Disk** has been selected. You will run this disk on each of the computers on your network. Click **Next**.



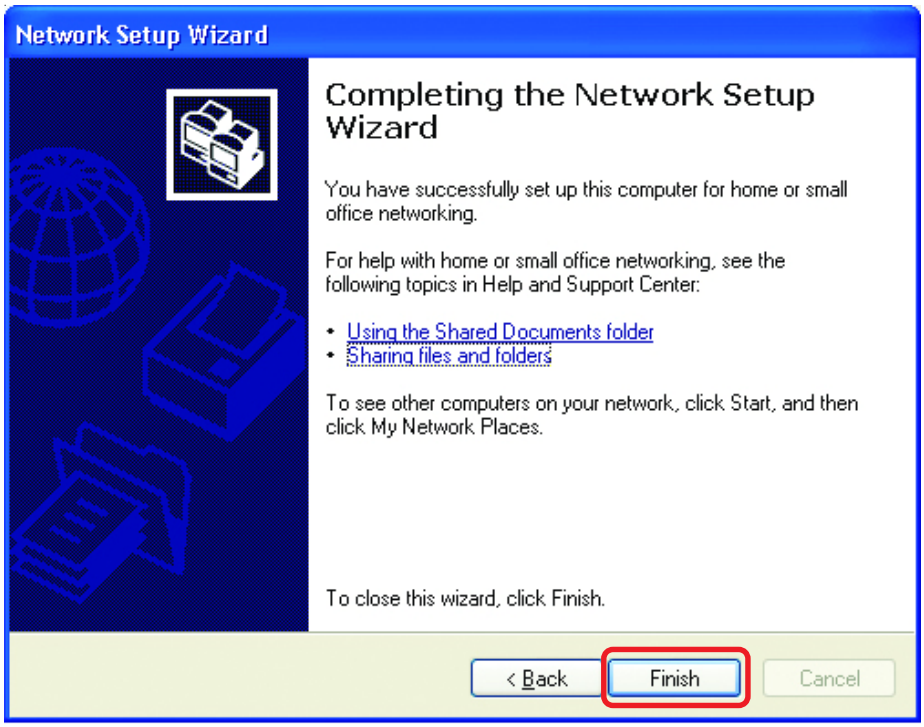
Insert a disk into the Floppy Disk Drive, in this case drive **A.**

Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. To continue click **Next.**

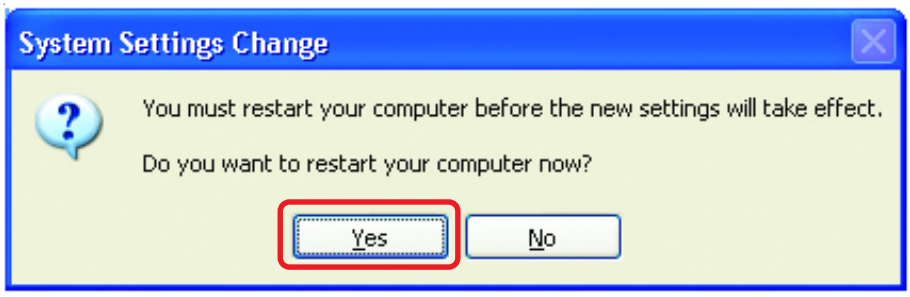


Networking Basics

Please read the information on this screen, then click **Finish** to complete the **Network Setup Wizard**.



The new settings will take effect when you restart the computer. Click **Yes** to restart the computer.



You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

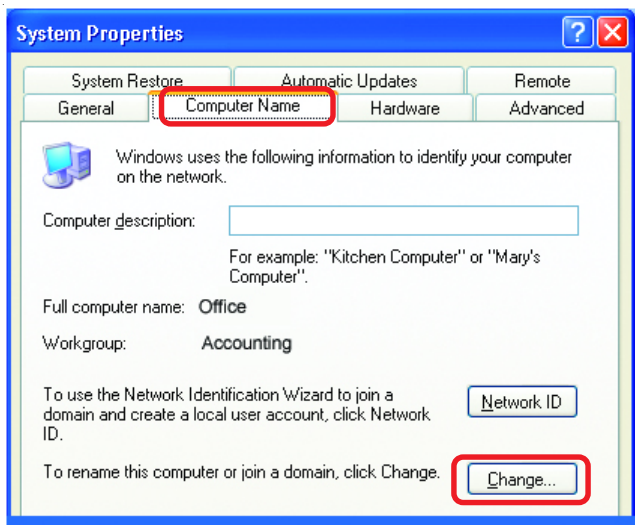
Networking Basics

Naming your Computer

To name your computer, please follow these directions:In **Windows XP**:

- Click **Start** (in the lower left corner of the screen)
- **Right-click** on **My Computer**
- Select **Properties** and click

- Select the **Computer Name Tab** in the System Properties window.

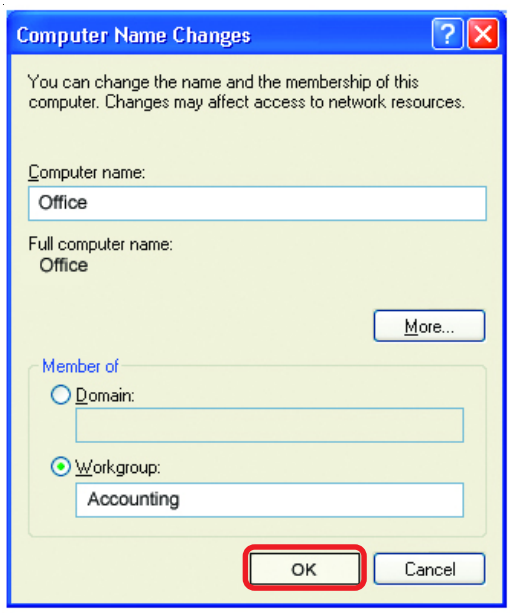


- You may enter a **Computer Description** if you wish; this field is optional.
- To rename the computer and join a domain, Click **Change**.

Networking Basics

Naming your Computer

- In this window, enter the **Computer name**
- Select **Workgroup** and enter the name of the **Workgroup**
- All computers on your network must have the same **Workgroup** name.
- Click **OK**



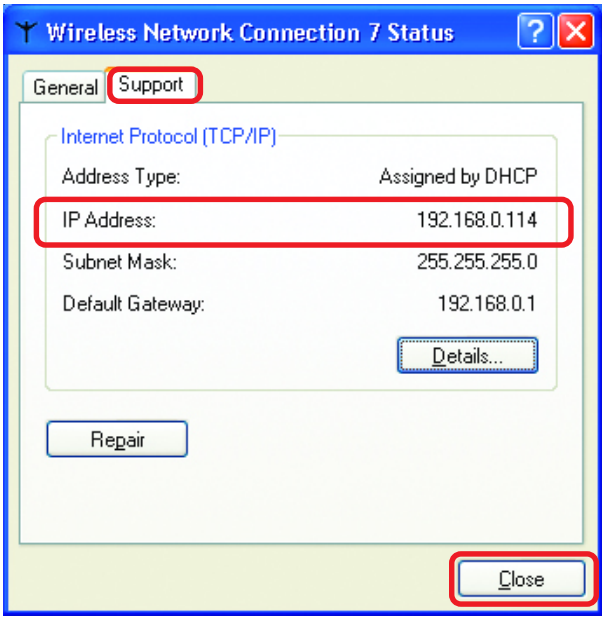
Checking the IP Address in Windows XP

The wireless adapter-equipped computers in your network must be in the same IP Address range (see Getting Started in this manual for a definition of IP Address Range.) To check on the IP Address of the adapter, please do the following:

- Right-click on the ***Local Area Connection icon*** in the task bar
- Click on **Status**

Checking the IP Address in Windows XP

This window will appear.



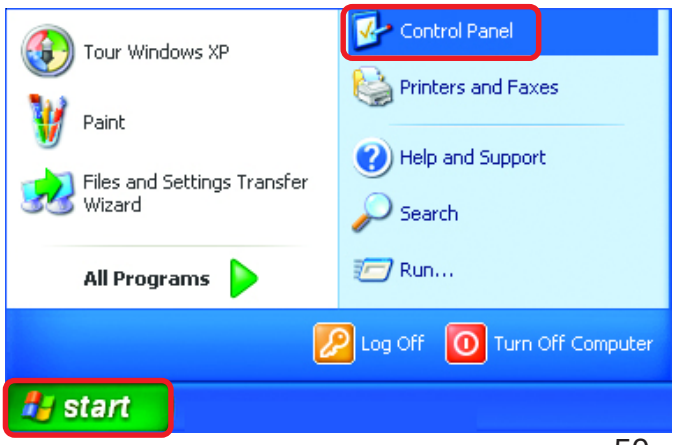
- Click the **Support tab**
- Click **Close**

Assigning a Static IP Address in Windows XP/2000

Note: Residential Gateways/Broadband Routers will automatically assign IP Addresses to the computers on the network, using DHCP (Dynamic Host Configuration Protocol) technology. If you are using a DHCP-capable Gateway/Router you will not need to assign Static IP Addresses.

If you are not using a DHCP capable Gateway/Router, or you need to assign a Static IP Address, please follow these instructions:

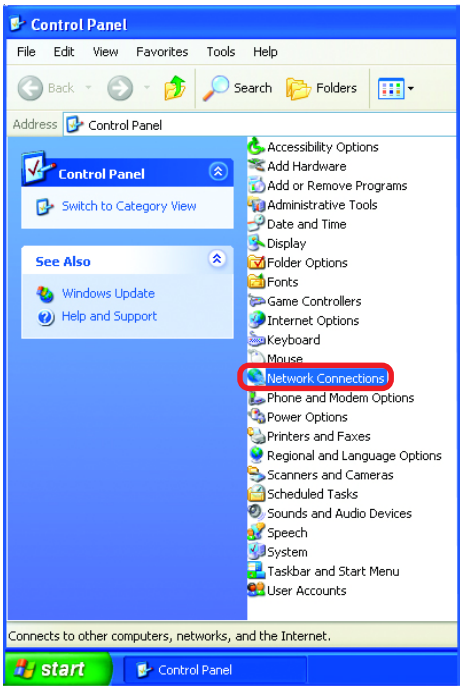
- Go to **Start**
- Double-click on **Control Panel**



Networking Basics

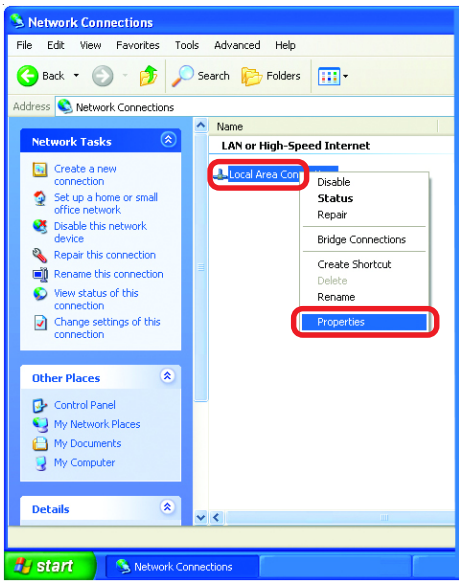
Assigning a Static IP Address in <u>Windows XP/2000</u>

- Double-click on **Network Connections**



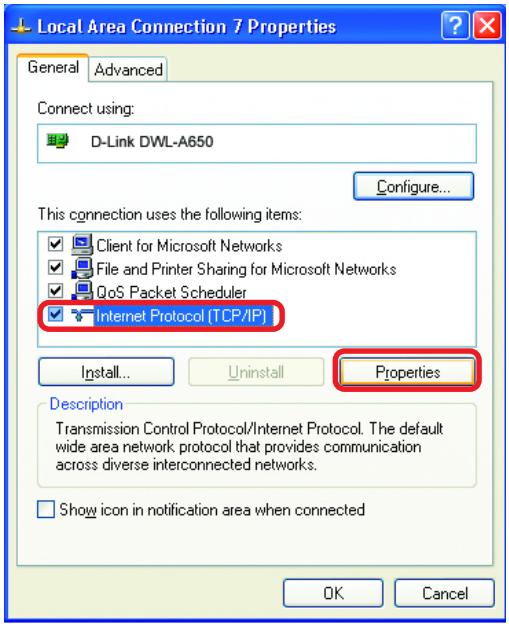
- Right-click on **Local Area Connections**

- Double-click on **Properties**

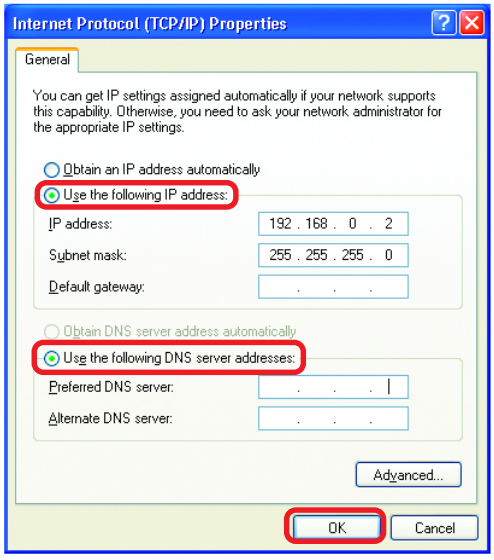


Networking Basics

Assigning a Static IP Address in Windows XP/2000



- Click on **Internet Protocol (TCP/IP)**
- Click **Properties**



- Input your **IP address and subnet mask.** (The IP Addresses on your network must be within the same range. For example, if one computer has an IP Address of 192.168.0.2, the other computers should have IP Addresses that are sequential, like 192.168.0.3 and 192.168.0.4. The subnet mask must be the same for all the computers on the network.)
- Input your **DNS server addresses. (Note: If you are entering a DNS server, you must enter the IP Address of the Default Gateway.)**

The DNS server information will be supplied by your ISP (Internet Service Provider.)

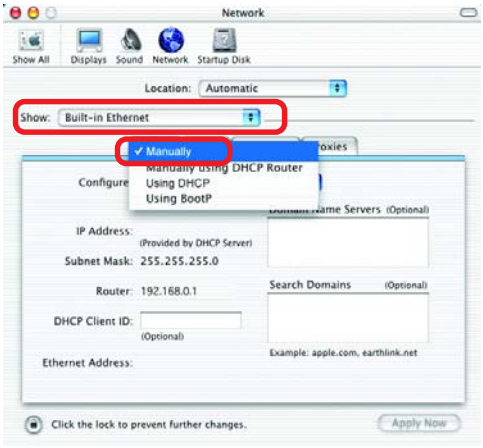
- Click **OK**

Networking Basics

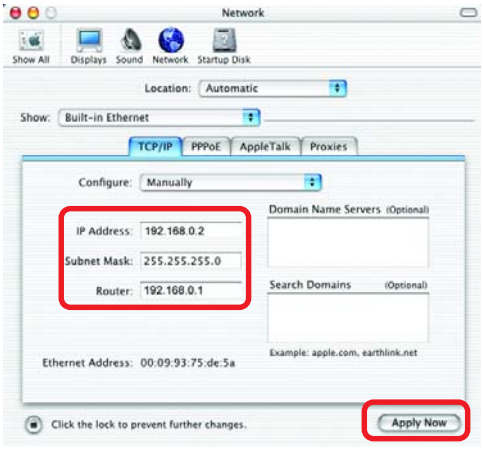
Assigning a Static IP Address with Macintosh OSX

- Go to the **Apple Menu** and select **System Preferences**
- Click on **Network**

- Select **Built-in Ethernet** in the **Show** pull-down menu
- Select **Manually** in the **Configure** pull-down menu



- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields
- Click **Apply Now**

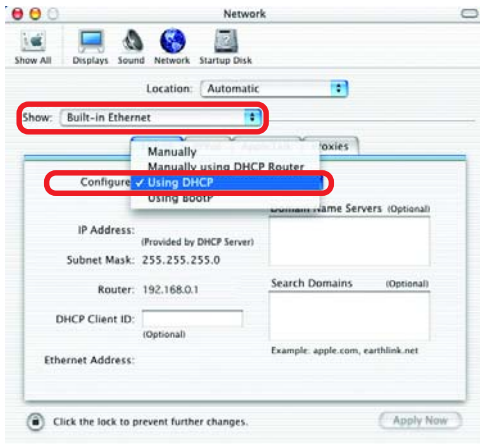


Networking Basics

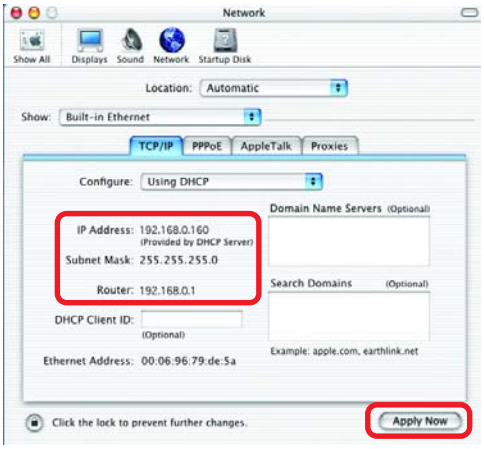
Selecting a Dynamic IP Address with Macintosh OSX

- Go to the **Apple Menu** and select **System Preferences**
- Click on **Network**

- Select **Built-in Ethernet** in the **Show** pull-down menu
- Select **Using DHCP** in the **Configure** pull-down menu

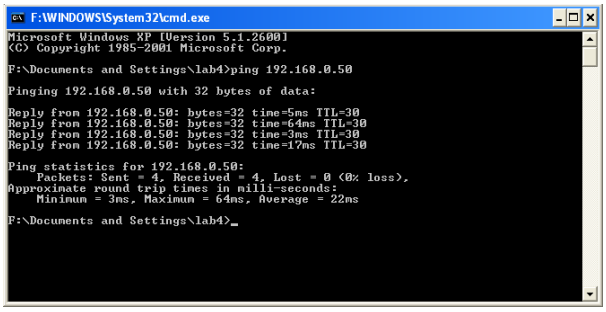


- Click **Apply Now**
- The **IP Address, Subnet mask**, and the **Router's IP Address** will appear in a few seconds



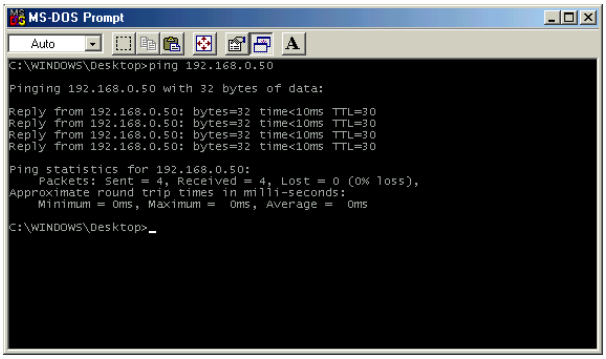
Checking the Wireless Connection by Pinging in Windows XP and 2000

- Go to **Start** > **Run** > type **cmd**. A window similar to this one will appear. Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP Address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the Wireless Router or Acess Point, as shown.



Checking the Wireless Connection by Pinging in Windows Me and 98

- Go to **Start** > **Run** > type **command**. A window similar to this will appear. Type **ping xxx.xxx.xxx.xxx** where **xxx** is the **IP Address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the wireless router or access point, as shown.



Networking Basics

Adding and Sharing Printers in Windows XP

After you have run the **Network Setup Wizard** on all the computers in your network (please see the **Network Setup Wizard** section at the beginning of **Networking Basics**,) you can use the **Add Printer Wizard** to add or share a printer on your network.

Whether you want to add a **local printer** (a printer connected directly to one computer,) share an **LPR printer** (a printer connected to a print server) or share a **network printer** (a printer connected to your network through a Gateway/Router,) use the **Add Printer Wizard**. Please follow the directions below:

First, make sure that you have run the Network Setup Wizard on all of the computers on your network.

On the following pages, we will show you these 3 ways to use the **Add Printer Wizard:**

1. **Adding a local printer**
2. **Sharing an network printer**
3. **Sharing an LPR printer**

(Other Networking Tasks)

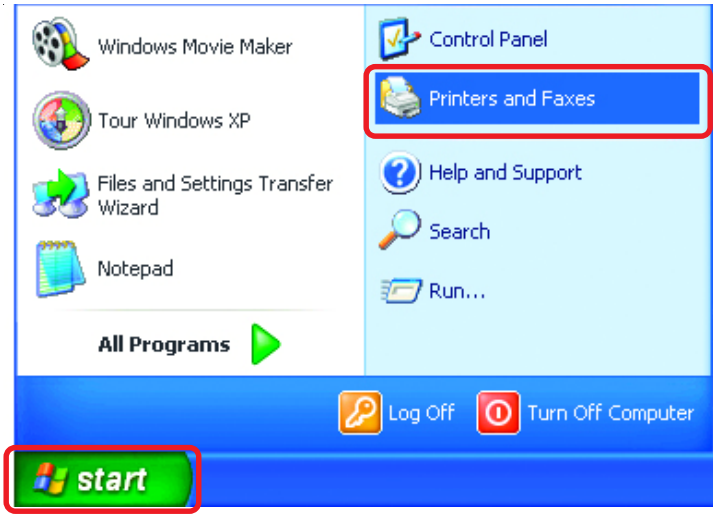
For help with other tasks, that we have not covered here, in home or small office networking, see **Using the Shared Documents** folder and **Sharing files and folders** in the **Help and Support Center** in Microsoft **Windows XP**.

Networking Basics

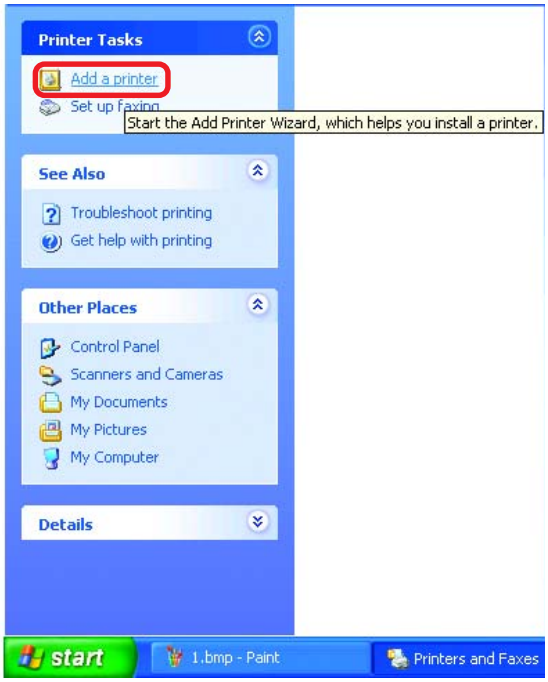
Adding a local printer *(a printer connected directly to a computer)*

A printer that is not shared on the network and is connected directly to one computer is called a **local printer**. If you do not need to share your printer on a network, follow these directions to add the printer to one computer.

- Go to **Start> Printers and Faxes**

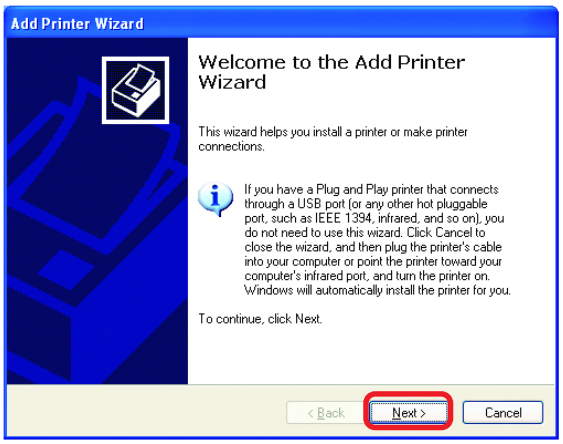


- Click on **Add a printer**

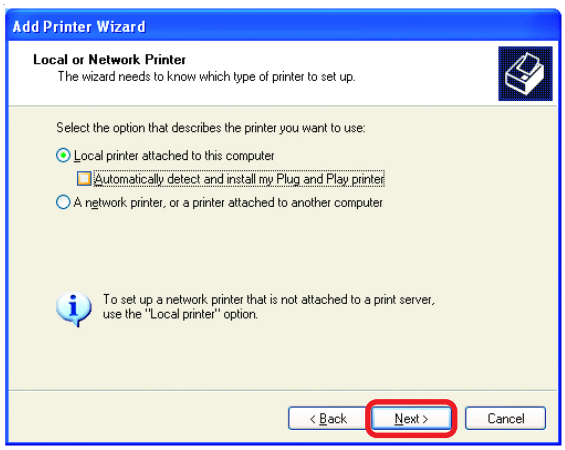


Networking Basics

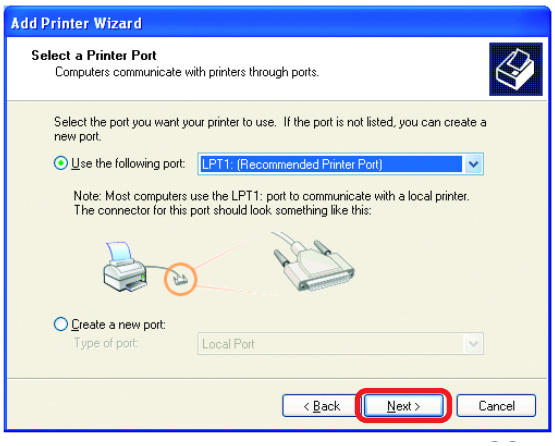
Adding a local printer



- Click **Next**



- Select **Local printer attached to this computer**
- *(Deselect **Automatically detect and install my Plug and Play printer** if it has been selected.)*
- Click **Next**



- Select **Use the following port:**
- From the pull-down menu **select the correct port** for your printer

*(Most computers use the **LPT1:** port, as shown in the illustration.)*

- Click **Next**

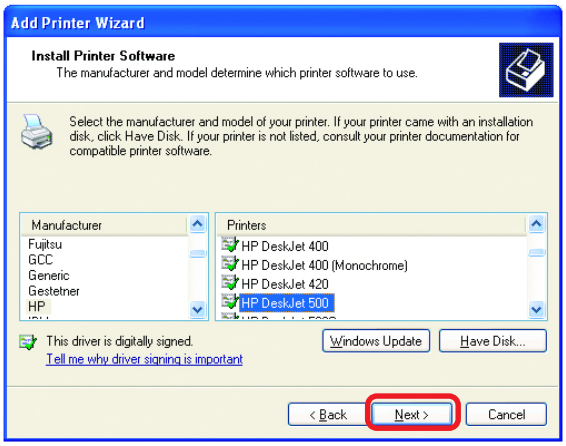
Networking Basics

Adding a local printer

- Select and highlight the **correct driver** for your printer.

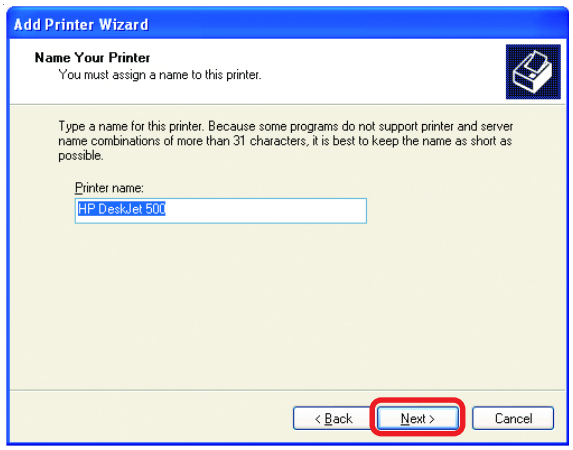
- Click **Next**

*(If the correct driver is not displayed, insert the CD or floppy disk that came with your printer and click **Have Disk**.)*



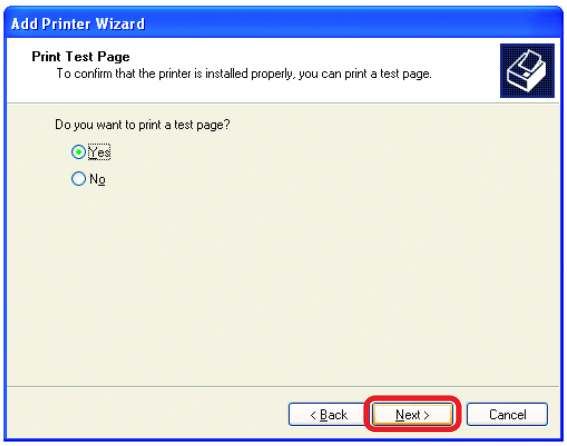
- At this screen, you can change the name of the printer (optional.)

- Click **Next**

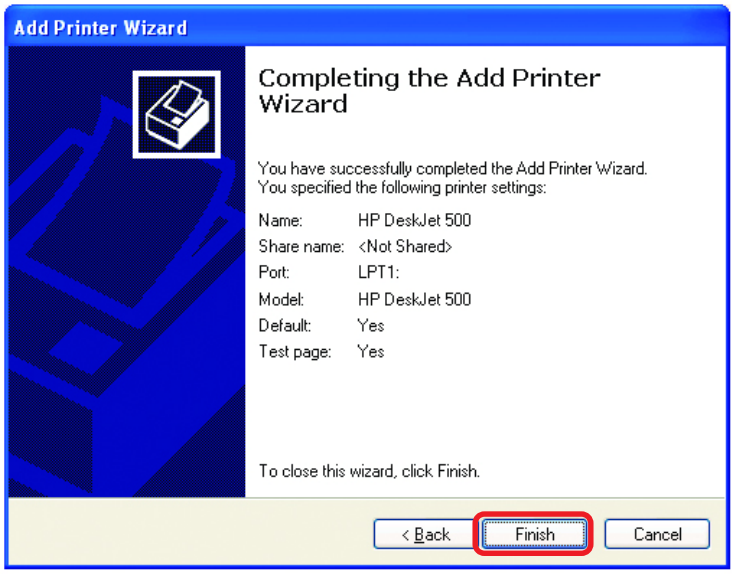


- Select **Yes**, to print a test page. A successful printing will confirm that you have chosen the correct driver.

- Click **Next**

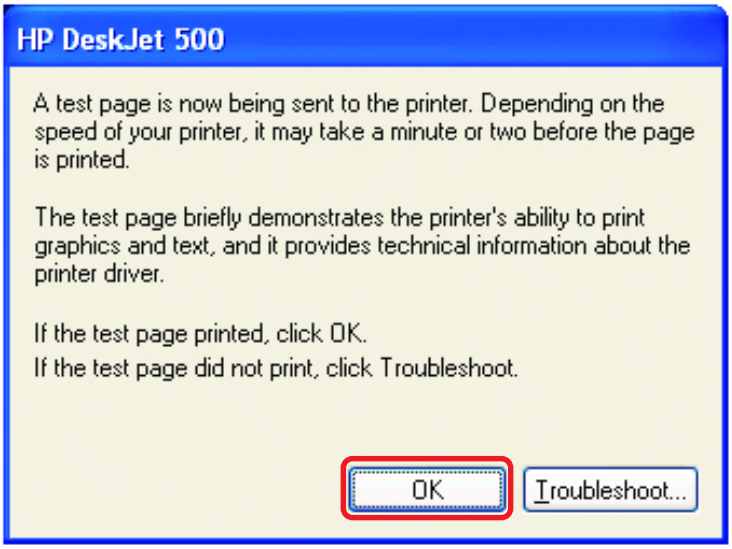


This screen gives you information about your printer.



Click **Finish**

When the test page has printed,

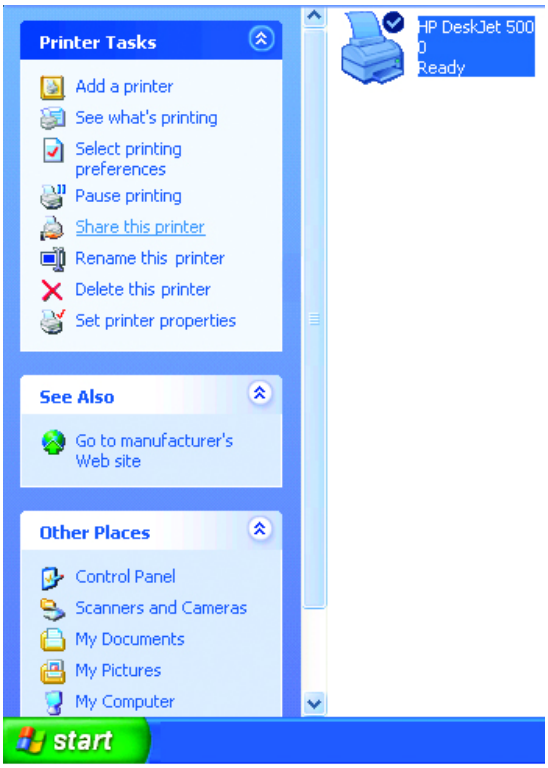


Click **OK**

Adding a local printer

- Go to **Start**> **Printers and Faxes**

A successful installation will display the printer icon as shown at right.

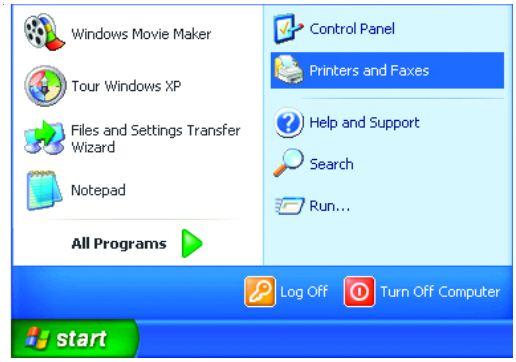


You have successfully added a local printer.

Sharing a network printer

After you have run the **Network Setup Wizard** on all the computers on your network, you can run the **Add Printer Wizard** on all the computers on your network. Please follow these directions to use the **Add Printer Wizard** to share a printer on your network:

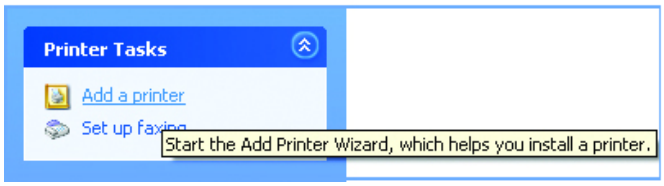
- Go to **Start**> **Printers and Faxes**



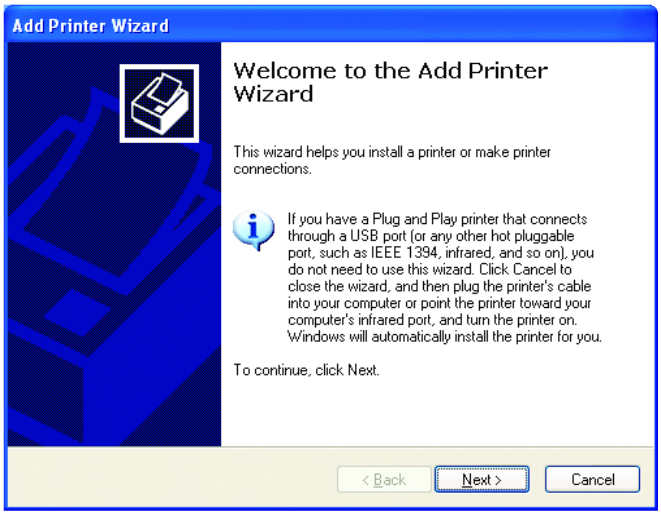
Networking Basics

Sharing a network printer

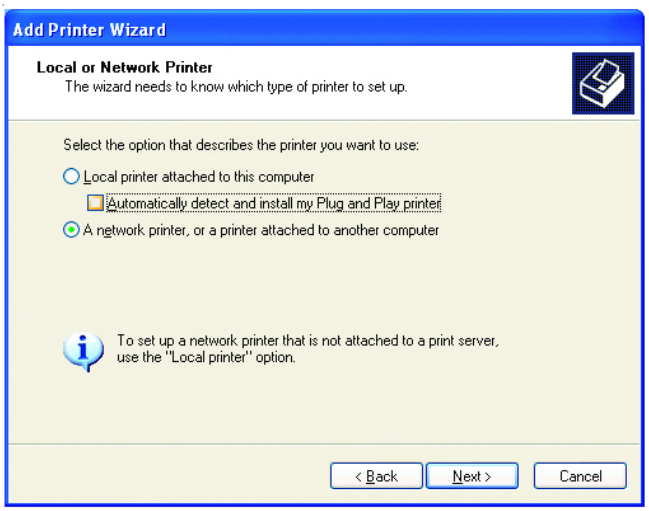
- Click on **Add a printer**



- Click **Next**



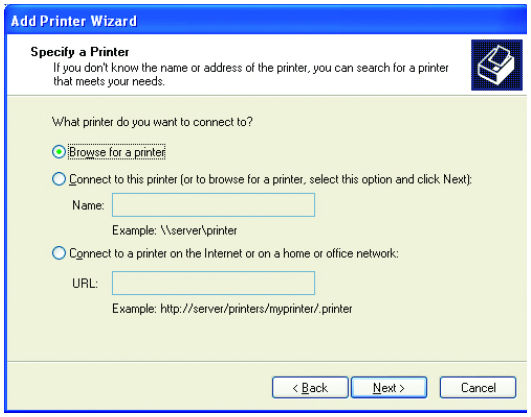
- Select **Network Printer**



- Click **Next**

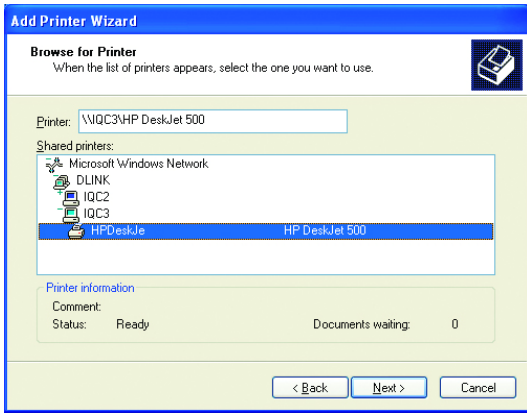
Networking Basics
Sharing a network printer

- Select **Browse for a printer**

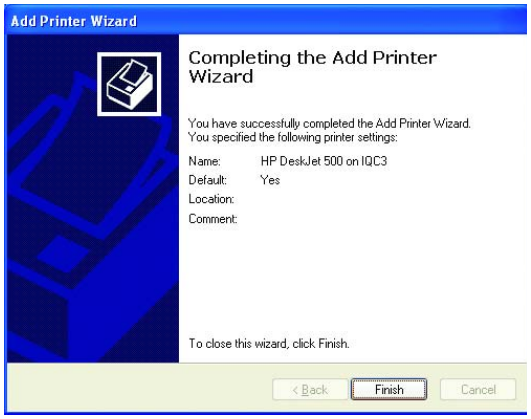


- Click **Next**

Select the **printer** you would like to share



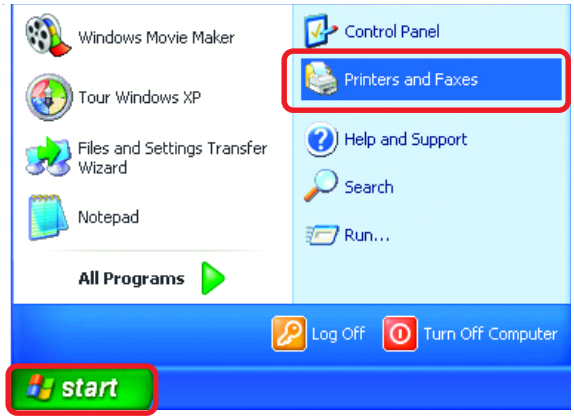
- Click **Next**



- Click **Finish**

Sharing a network printer

- To check for proper installation:
- Go to **Start** > **Printers and Faxes**



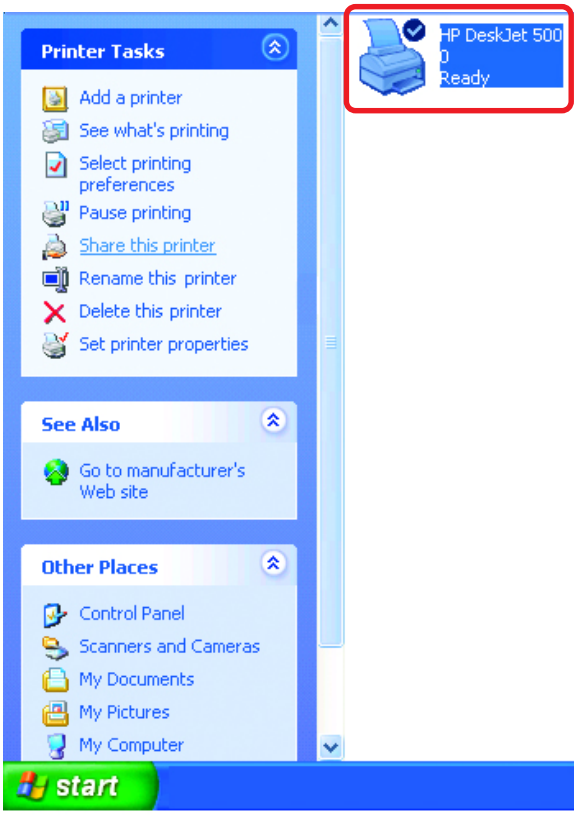
The printer icon will appear at right, indicating proper installation.

You have completed adding the printer.

To share this printer on your network:

- Remember the **printer name**
- Run the **Add Printer Wizard** on all the computers on your network
- Make sure you have already run the **Network Setup Wizard** on all the network computers

After you run the **Add Printer Wizard** on all the computers in the network, you can share the printer.



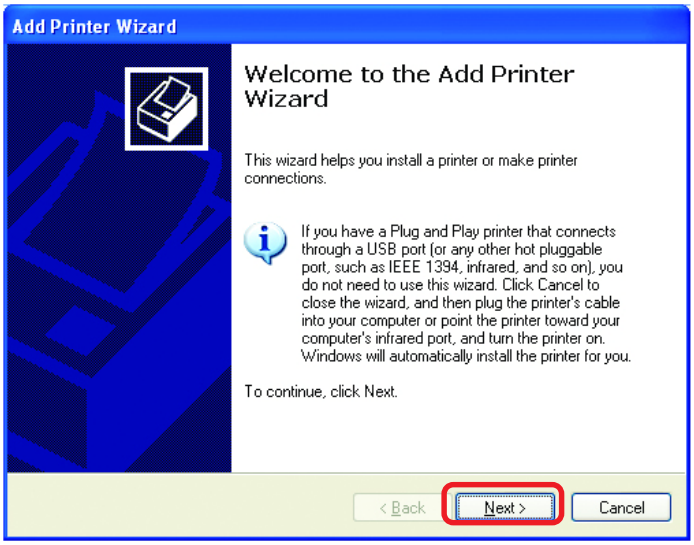
Networking Basics

Sharing an LPR printer

To share an **LPR printer** (using a print server,) you will need a Print Server such as the **DP-101P+**. Please make sure that you have run the **Network Setup Wizard** on all the computers on your network. To share an **LPR printer**, please follow these directions:

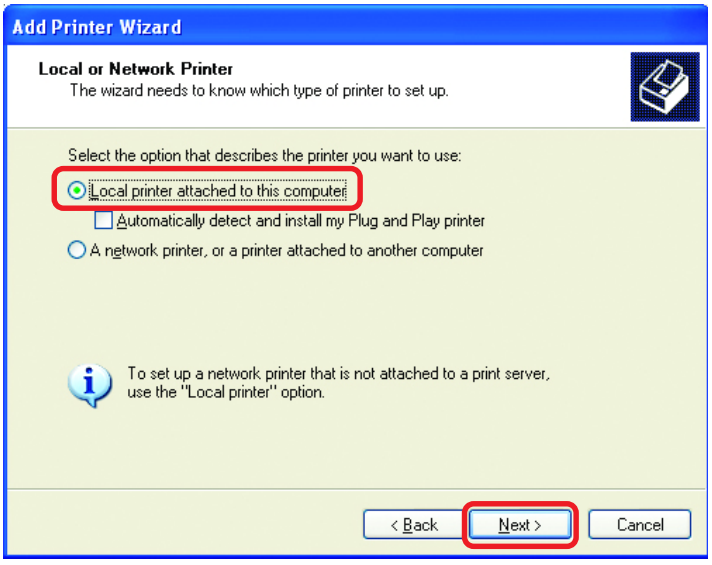
- Go to **Start** > **Printers and Faxes**
- Click on **Add a Printer**

The screen to the right will appear



- Click **Next**

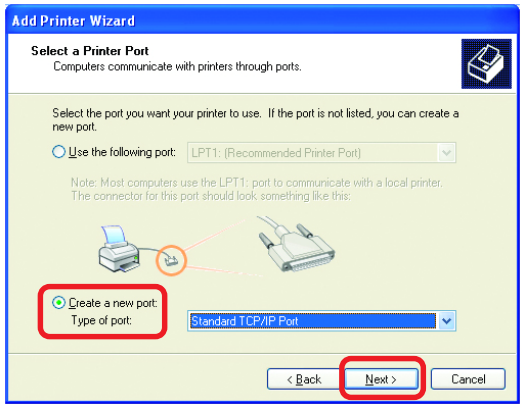
- Select **Local Printer...**



- Click **Next**

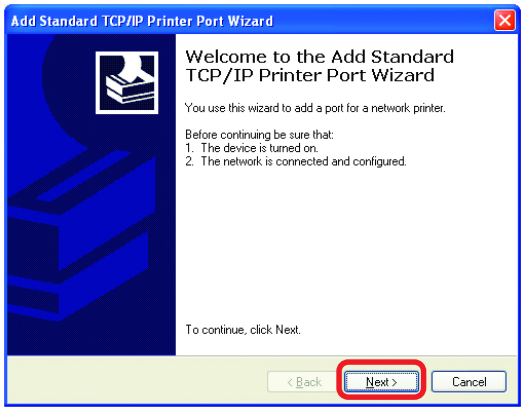
Sharing an LPR printer

- Select **Create a new port**
- From the pull-down menu, select **Standard TCP/IP Port**, as shown.



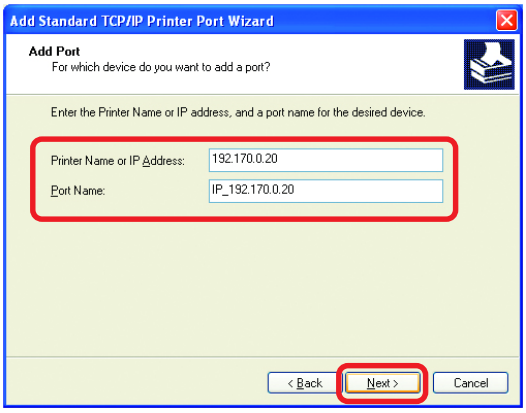
- Click **Next**

- Please read the instructions on this screen



- Click **Next**

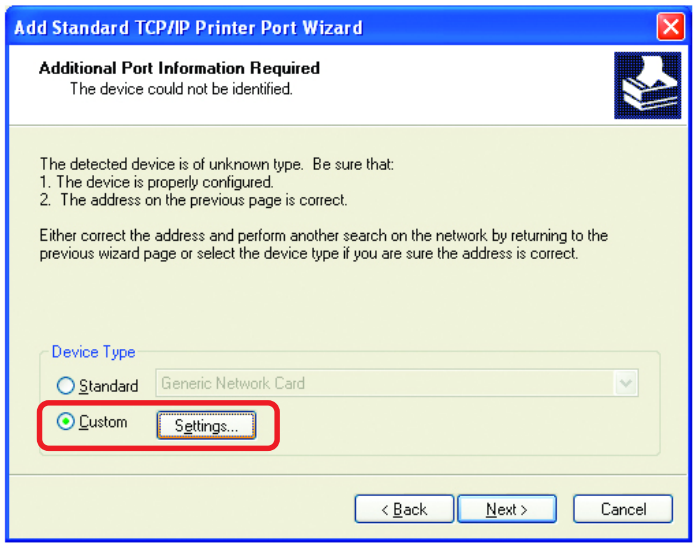
- Enter the **Printer IP Address** and the **Port Name**, as shown.



- Click **Next**

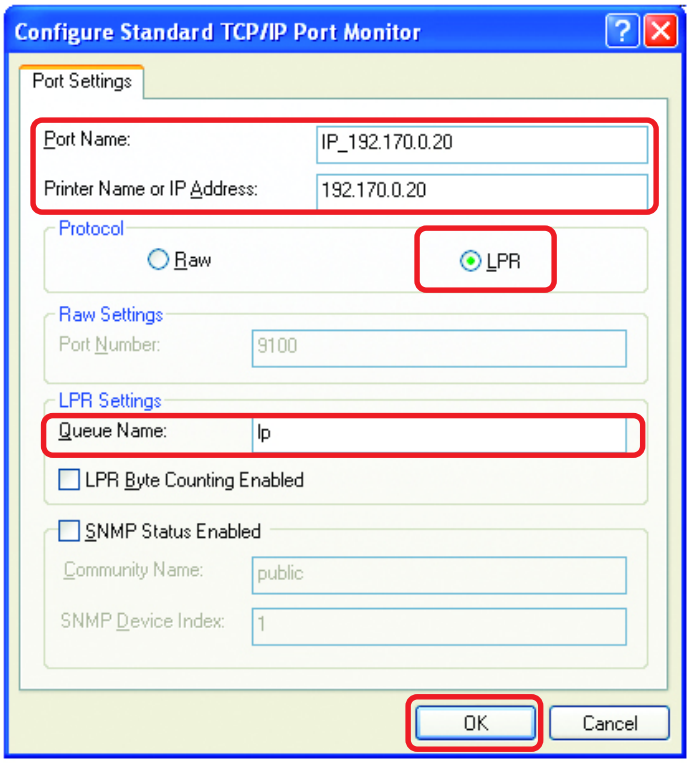
Sharing an LPR printer

- In this screen, select **Custom**



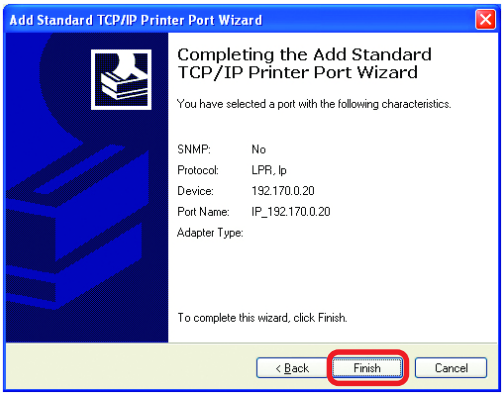
- Click **Settings**

- Enter the **Port Name** and the **Printer Name** or **IP Address**.
- Select **LPR**
- Enter a **Queue Name** (if your Print-Server/ Gateway has more than one port, you will need a **Queue name**.)
- Click **OK**



Sharing an LPR printer

- This screen will show you information about your printer.

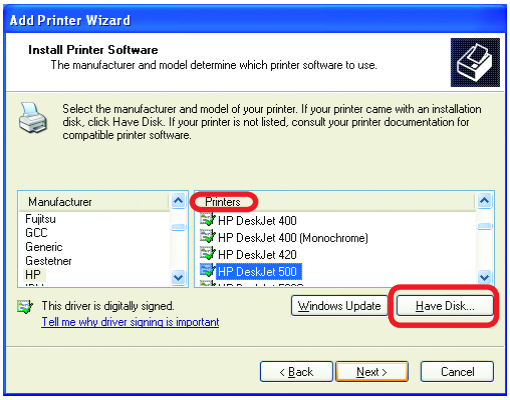


- Click **Finish**

- Select the **printer** you are adding from the list of **Printers**.

- Insert the printer driver disk that came with your printer.

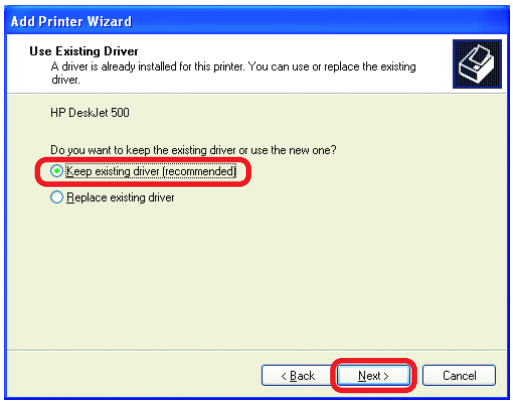
- Click **Have Disk**



If the printer driver is already installed, do the following:

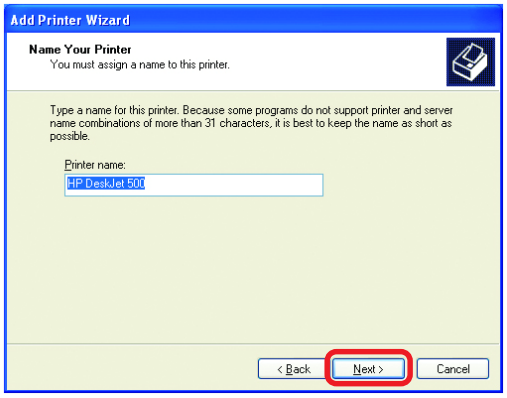
- Select **Keep existing driver**

- Click **Next**

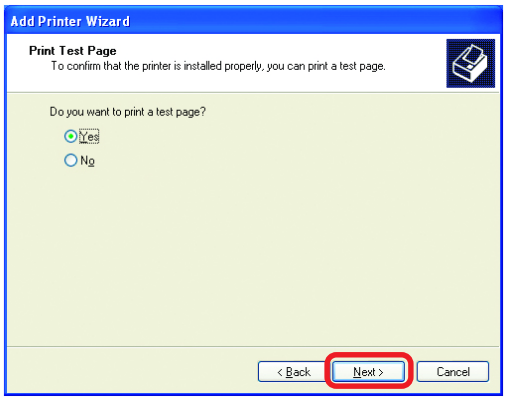


Sharing an LPR printer

- You can rename your printer if you choose. It is optional.
- *Please remember the name of your printer. You will need this information when you use the **Add Printer Wizard** on the other computers on your network.*
- Click **Next**

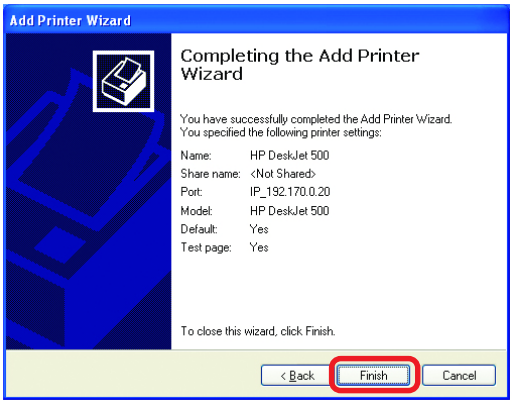


- Select **Yes**, to print a test page.
- Click **Next**



This screen will display information about your printer.

- Click **Finish** to complete the addition of the printer.
- Please run the **Add Printer Wizard** on all the computers on your network in order to share the printer.



*Note: You must run the **Network Setup Wizard** on all the computers on your network before you run the **Add Printer Wizard**.*

Troubleshooting

This Chapter provides solutions to problems that can occur during the installation and operation of the DI-754 Wireless Broadband Router. We cover various aspects of the network setup, including the network adapters. Please read the following if you are having problems.

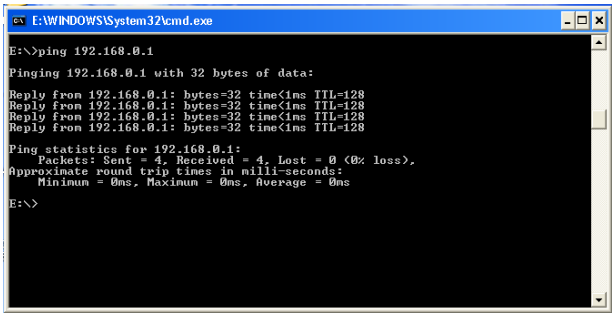
Note: It is recommended that you use an Ethernet connection to configure the DI-754 Wireless Broadband Router.

1. The computer used to configure the DI-754 cannot access the Configuration menu.

- Check that the **Ethernet LED** on the DI-754 is **ON**. If the **LED** is not **ON**, check that the cable for the Ethernet connection is securely inserted.
- Check that the Ethernet Adapter is working properly. Please see item 3 (***Check that the drivers for the network adapters are installed properly***) in this **Troubleshooting** section to check that the drivers are loaded properly.
- Check that the **IP Address** is in the same range and subnet as the DI-754. Please see ***Checking the IP Address in Windows XP*** in the **Networking Basics** section of this manual.

Note: The IP Address of the DI-754 is 192.168.0.1. All the computers on the network must have a unique IP Address in the same range, e.g., 192.168.0.x. Any computers that have identical IP Addresses will not be visible on the network. They must all have the same subnet mask, e.g., 255.255.255.0

- Do a **Ping test** to make sure that the DI-754 is responding. Go to **Start**>**Run**>Type **Command**>Type **ping 192.168.0.1.** A successful ping will show four replies.

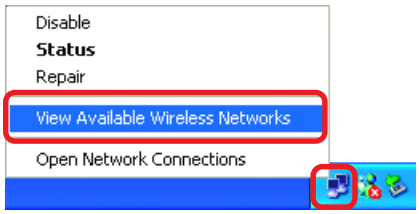


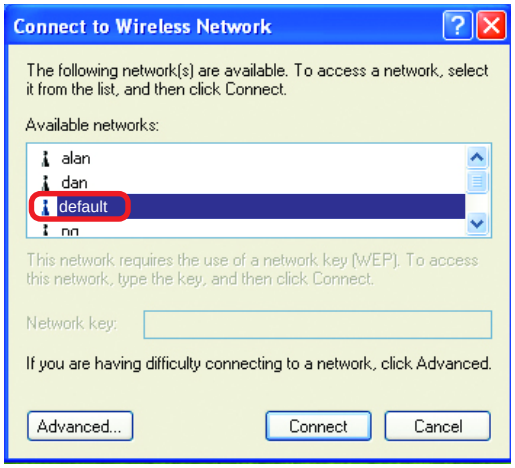
Note: If you have changed the default IP Address, make sure to ping the correct IP Address assigned to the DI-754.

Troubleshooting

2. The wireless client cannot access the Internet in the Infrastructure mode.

Make sure the wireless client is associated and joined with the correct Access Point. To check this connection: **Right-click** on the **Local Area Connection icon** in the taskbar> select **View Available Wireless Networks**. The **Connect to Wireless Network** screen will appear. Please make sure you have selected the correct available network, as shown in the illustrations below.





- Check that the **IP Address** assigned to the wireless adapter is within the same **IP Address range** as the access point and gateway. *(Since the DI-754 has an IP Address of 192.168.0.1, wireless adapters must have an IP Address in the same range, e.g., 192.168.0.x. Each device must have a unique IP Address; no two devices may have the same IP Address. The subnet mask must be the same for all the computers on the network.)* To check the **IP Address** assigned to the wireless adapter, **double-click** on the **Local Area Connection icon** in the taskbar > select the **Support tab** and the **IP Address** will be displayed. *(Please refer to **Checking the IP Address** in the **Networking Basics** section of this manual.)*

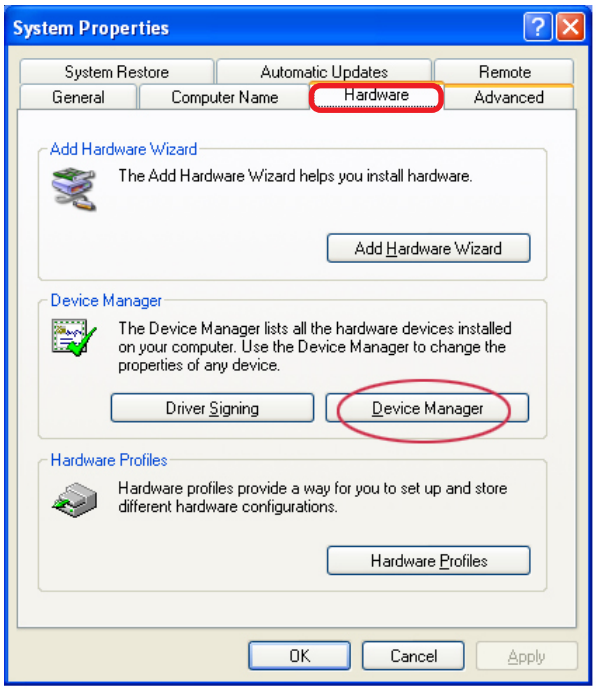
- If it is necessary to assign a **Static IP Address** to the wireless adapter, please refer to the appropriate section in **Networking Basics**. If you are entering a **DNS Server address** you must also enter the **Default Gateway Address.** *(Remember that if you have a DHCP-capable router, you will not need to assign a Static IP Address. See **Networking Basics: Assigning a Static IP Address.**)*

Troubleshooting

3. Check that the drivers for the network adapters are installed properly.

You may be using different network adapters than those illustrated here, but this procedure will remain the same, regardless of the type of network adapters you are using.

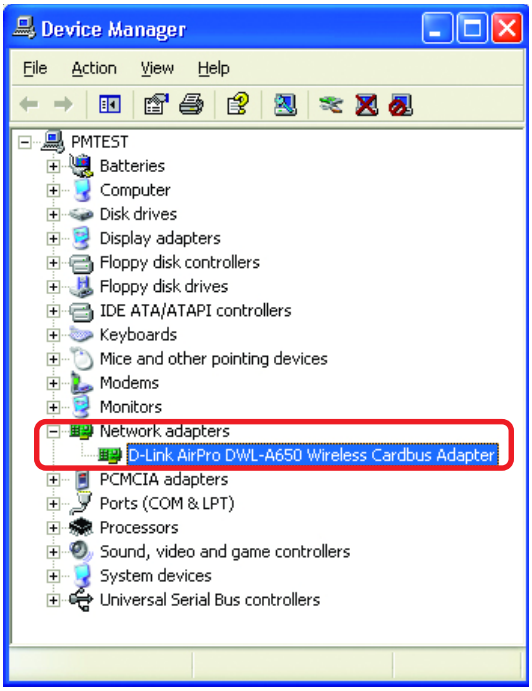
- **Select** the **Hardware Tab**



- Click **Device Manager**

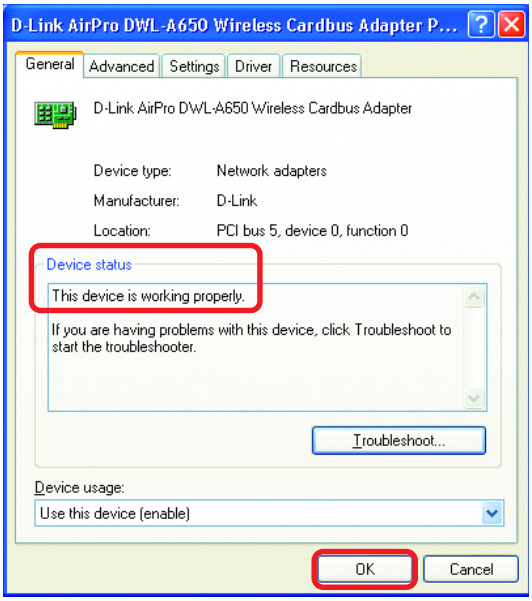
Troubleshooting

- Double-click on **Network Adapters**



- Right-click on **D-Link *Air*Pro DWL-A650 Wireless Cardbus Adapter**

- Select **Properties** to check that the drivers are installed properly



- Look under **Device Status** to check that the device is working properly

- Click **OK**

Troubleshooting

4. What variables may cause my wireless products to lose reception?

D-Link products let you access your network from virtually anywhere you want. However, the positioning of the products within your environment will affect the wireless range. Please refer to **Installation Considerations** in the **Wireless Basics** section of this manual for further information about the most advantageous placement of your D-Link wireless products.

5. Why does my wireless connection keep dropping?

- Antenna Orientation- Try different antenna orientations for the DI-754. Try to keep the antenna at least 6 inches away from the wall or other objects.
- If you are using 2.4GHz cordless phones, X-10 equipment or other home security systems, ceiling fans, and lights, your wireless connection will degrade dramatically or drop altogether. Try changing the Channel on your Router, Access Point and Wireless adapter to a different Channel to avoid interference.
- Keep your product away (at least 3-6 feet) from electrical devices that generate RF noise, like microwaves, Monitors, electric motors, etc.

6. Why can't I get a wireless connection?

If you have enabled Encryption on the DI-754, you must also enable encryption on all wireless clients in order to establish a wireless connection.

- For 802.11a, the Encryption settings are: 64, 128 or 152 bit. Make sure that the encryption bit level is the same on the Router and the Wireless Client.
- For 802.11b, the Encryption settings are: 64, 128, or 256 bit. Make sure that the encryption bit level is the same on the Router and the Wireless Client.
- Make sure that the SSID on the Router and the Wireless Client are exactly the same. If they are not, wireless connection will not be established. Please note that there are two separate SSIDs for 802.11a and 802.11b. The default SSID for both 802.11a and 802.11b is **default**.
- If you cannot achieve connection with 802.11b clients, make sure that the D-Link DWL-650+ is inserted properly into the Expansion slot.

Troubleshooting

7. Resetting the DI-754 to Factory Default Settings

After you have tried other methods for troubleshooting your network, you may choose to **Reset** the DI-754 to the factory default settings. Remember that D-Link *Air*Pro products network together, out of the box, at the factory default settings.

To hard-reset the D-Link *Air*Pro DI-754 to Factory Default Settings, please do the following:

- Locate the **Reset** button on the back of the DI-754
- Use a paper clip to press the **Reset** button
- Hold for about 10 seconds and then release
- After the DI-754 reboots (this may take a few minutes) it will be reset to the factory **Default** settings

Technical Specifications

Standards

- IEEE 802.11b (optional with DWL-650+)
- IEEE 802.11a
- IEEE 802.3 and IEEE 802.3u
- IEEE 802.3x

Ports

- (1) 10/100Base-T Ethernet, RJ-45 (UTP)
- (1) Power – 5V DC, 3.0A

Network Management

- Web-Based Interface

Network Architecture

- Supports Infrastructure Mode

Diagnostic LED

- Power
- M1
- M2
- WAN 802.11a
- WLAN 802.11b
- Local Network (Ports 1-4)
- Local Network (Ports 1-4)

Range

- Indoors – up to 328 feet (100 meters)

Temperature

- Operating: 0ºC to 40ºC (32ºF to 104ºF)
- Storing: -25ºC to 60ºC (-77ºF to 140ºF)

Humidity:

- 5%-95%, non-condensing

Technical Specifications

Emissions:

- FCC part 15b
- UL1950-3

Physical Dimensions:

- L = 9.25 inches
- W = 6.25 inches
- H = 1.50 inches

802.11a Specifications

Data Rates:*

- 6, 9, 12, 18, 24, 36, 48, 54, 72 Mbps (with auto-Fallback)

Data Security:

- 64, 128, 152 bit with Dynamic Keying
- Access Control List

Antenna Type:

- External 5dBi dipole antenna with diversity

Available Channels:

- Eight non-overlapping channels for North America

Frequency Range:

- 5.150 – 5.350 GHz

Modulation Technology:

- Orthogonal Frequency Division Multiplexing (OFDM)

*Maximum wireless signal rate based on IEEE Standard 802.11a specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

802.11a Specifications *(continued)*

Modulation Techniques:

- BPSK
- QPSK
- 16 QAM
- 64 QAM

802.11b Specifications with optional DWL-650+

Data Rates:

- 1, 2, 5.5, 11, 22 Mbps (with Automatic Fallback)

Data Security:

- 64, 128, 256-bit WEP (Wired Equivalent Privacy) Encryption

Available Channels:

- Eleven channels for North America. Three non-overlapping.

Frequency Range:

- 2.4 – 2.4835 GHz

Modulation Techniques:

- Barker (1Mbps/0db)
- Barker (2Mbps/0db)
- CCK (5.5Mbps/5.5db)
- PBCC (5.5Mbps/1.5db)
- CCK (11Mbps/8.5db)
- PBCC (11Mbps/4.5db)
- PBCC (22Mbps/8.5db)

802.11b Specifications (with optional DWL-650+)-*continued*

Modulation Technology:

- PBCC - Packet Binary Convolutional Coding
- Direct Sequence Spread Spectrum (DSSS)
- 11-chip Barker sequence

Contacting Technical Support

Technical Support

You can find software updates and user documentation on the D-Link website.

D-Link provides free technical support for customers within the United States and within Canada for the duration of the warranty period on this product.

U.S. and Canadian customers can contact D-Link Technical Support through our website, or by phone.

Tech Support for customers within the United States:

D-Link Technical Support over the Telephone:
(877) 453-5465
Monday to Friday 7:00am to 12:30am PST.

D-Link Technical Support over the Internet:
http://support.dlink.com
email:support@dlink.com

Tech Support for customers within Canada:

D-Link Technical Support over the Telephone:
(800) 361-5265
Monday to Friday 8:30am to 9:00pm EST

D-Link Technical Support over the Internet:
http://support.dlink.ca
email:support@dlink.ca

D-Link®
Building Networks for People

Limited Warranty
(USA Only)

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited Warranty:

- Only to the person or entity that originally purchased the product from D-Link or its authorized reseller or distributor, and
- Only for products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, or addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link product described below ("Hardware") will be free from material defects in workmanship and materials under normal use from the date of original retail purchase of the product, for the period set forth below ("Warranty Period"), except as otherwise stated herein.

- Hardware (excluding power supplies and fans): Three (3) years
- Power supplies and fans: One (1) year
- Spare parts and spare kits: Ninety (90) days

The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund the actual purchase price paid. Any repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement hardware need not be new or have an identical make, model or part. D-Link may, at its option, replace the defective Hardware or any part thereof with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement hardware will be warranted for the remainder of the original Warranty Period or ninety (90) days, whichever is longer, and is subject to the same limitations and exclusions. If a material defect is incapable of correction, or if D-Link determines that it is not practical to repair or replace the defective Hardware, the actual price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware or part thereof that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Software Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Software Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund the portion of the actual purchase price paid that is attributable to the Software. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Replacement Software will be warranted for the remainder of the original Warranty Period and is subject to the same limitations and exclusions. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for Hardware and Software portions of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same, along with proof of purchase of the product (such as a copy of the dated purchase invoice for the product) if the product is not registered.
- The customer must obtain a Case ID Number from D-Link Technical Support at 1-877-453-5465, who will attempt to assist the customer in resolving any suspected defects with the product. If the product is considered defective, the customer must obtain a Return Material Authorization ("RMA") number by completing the RMA form and entering the assigned Case ID Number at https://rma.dlink.com/.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Systems, Inc., 17595 Mt. Herrmann, Fountain Valley, CA 92708**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link. Return shipping charges shall be prepaid by D-Link if you use an address in the United States, otherwise we will ship the product to you freight collect. Expedited shipping is available upon request and provided shipping charges are prepaid by the customer.

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered: The Limited Warranty provided herein by D-Link does not cover: Products that, in D-Link's judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; and Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. While necessary maintenance or repairs on your Product can be performed by any company, we recommend that you use only an Authorized D-Link Service Office. Improper or incorrectly performed maintenance or repair voids this Limited Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO THE DURATION OF THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY.

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This Limited Warranty provides specific legal rights and you may also have other rights which vary from state to state.

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CE Mark Warning: This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures**:**

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For detailed warranty information applicable to products purchased outside the United States, please contact the corresponding local D-Link office.

Registration

Product registration is entirely voluntary and failure to complete or return this form will not diminish your warranty rights.